ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

771 Closure Project Decommissioning Operations Plan Modification 4 and Proposed Action Memorandum for Under Building Contamination Remediation

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RECORD OF MODIFICATIONS

DOP Modification #	Effective Date	Description
1	6/7/00	Field modification to clarify the endstate
2	6/14/00	Field modification to separate Set 38 into four separate sets
3	3/2/01	Major modification incorporating under building contamination remediation and demolition activities
4	9/6/01	Minor modification to clarify Section 5.3.2 since tap and drain activities are complete

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ACRONYMS AND ABBREVIATIONS

AHA	activity hazard analyses
AR	Administrative Record (File)
ARARs	applicable or relevant and appropriate requirements
AST	aboveground storage tank
BIO	Basis for Interim Operation
CCR	Code of Colorado Regulations
CDD	Closure Description Document
CDPHE	Colorado Department of Public Health and Environment
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CHWA	Colorado Hazardous Waste Act
CHWR	Colorado Hazardous Waste Regulations
CPB	Closure Project Baseline
DDCP	Decontamination and Decommissioning Characterization Protocol
DOE	U.S. Department of Energy, Rocky Flats Field Office
DOP	Decommissioning Operations Plan
DOT	U.S. Department of Transportation
dpm	disintegrations per minute
DPP	Decommissioning Program Plan
EPA	U.S. Environmental Protection Agency
ER	environmental restoration
ES&H	environmental safety and health
FDPM	Facility Disposition Program Manual
HASP	Health and Safety Plan
HEPA	high efficiency particulate air
HVAC	heating, ventilation and air conditioning
IA	Industrial Area
IASAP	Industrial Area Sampling and Analysis Plan
IDEC	indirect/direct evaporative cooling
IDC	Item Description Code
IGD	RFCA Implementation Guidance Document
IHSS	Individual Hazardous Substance Site
IM/IRA	Interim Measure/Interim Remedial Action

ISM	Integrated Safety Management
ISMS	Integrated Safety Management System
IV	independent verification
IVC	Independent Verification Contractor
IWCP	Integrated Work Control Program
JHA	job hazards analysis
LLW	low-level waste
LLMW	low-level mixed waste
LRA	lead regulatory agency
MOU	Memorandum of Understanding
N/A	not applicable
nCi	nanocurie
NEPA	National Environmental Policy Act
NESHAPs	National Emission Standards for Hazardous Air Pollutants
NTS	Nevada Test Site
OSHA	Occupational Safety and Health Administration
PA	Protected Area
PAC	potential area of concern
PAM	Proposed Action Memorandum
PCBs	polychlorinated biphenyls
PCOC	potential contaminant of concern
PDS	pre-demolition survey
PDSP	Pre-Demolition Survey Plan
PEB	pre-evolution briefing
PMP	Project Management Plan
POD	Plan of the Day
POW	Plan of the Week
PPE	personal protective equipment
psi	pounds per square inch
RACT	reasonably available control technologies
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFCAB	Rocky Flats Citizens Advisory Board
RFCLOG	Rocky Flats Coalition of Local Governments

RFETS	Rocky Flats Environmental Technology Site
RISS	Remediation, Industrial Decommissioning, and Site Services
RLC	reconnaissance level characterization
RLCR	Reconnaissance Level Characterization Report
RSOP	RFCA Standard Operating Protocol
RTR	real-time radiography
SCO	surface-contaminated object
Site	Rocky Flats Environmental Technology Site
SNM	special nuclear material
STP	Site Treatment Plan
TP	termination point
TRM	transuranic mixed waste
TRU	transuranic waste
TSD	treatment, storage, disposal (facility)
TU	temporary unit
UBC	under-building contamination
UCNI	Uncontrolled Classified Nuclear Information
UST	underground storage tank
VOC	volatile organic compound
WAC	waste acceptance criteria
WGI	waste generation instruction
WIPP	Waste Isolation Pilot Plant

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EXECUTIVE SUMMARY

This Decommissioning Operations Plan (DOP) modification for the 771 Closure Project applies to buildings with significant contamination or hazards (Type 3 facilities) and buildings without significant contamination or hazards, but in need of decontamination (Type 2 buildings). This DOP modification is also the Environmental Restoration (ER) Rocky Flats Cleanup Agreement (RFCA) decision document for the under building contamination remediation. The identification of Type 1 facilities and their disposition path are included for information only. This document is a major modification of the DOP for the 771 Closure Project approved January 1999. The modification is a complete re-write due to the scope of the changes. This modification follows the format of the other DOPs and contains additional detail on work activities. This additional detail reflects the advanced state of the 771 Closure Project decommissioning activities and planning. This modification includes the following additional information and changes:

- Additional physical and historical information about Building 771 (see Section 3.1).
- The Type 2 facilities (throughout the document, but particularly in Sections 3.1, 4.3, 4.4, and 4.7).
- Reference to the RFCA Standard Operating Protocols (RSOPs). This modification satisfies the notification requirements of the RSOPs (throughout the document, but particularly in Sections 4.4 and 4.7).
- Demolition activities (see Section 4.7).
- Under-building contamination remediation activities (see Sections 4.5, 5.1, 7.0, and 8.0).
- A streamlined Resource Conservation and Recovery Act (RCRA) closure process, which reduces paperwork (see Section 6.0).
- An exception to the ***RSOP for Recycling Concrete***, which will eliminate the need to stockpile and size reduce the concrete while still meeting the lifetime subsidence requirement in the RSOP (see Section 5.5).

In general, the 771 Closure Project dispositioning will be conducted in the following sequence: deactivation activities will be completed; component removal, size reduction, and decontamination will be conducted; the under building contamination will be remediated, as necessary; the pre-demolition survey will be conducted; and the building will be demolished. The outbuildings surrounding Buildings 771 and 774 will be conducted in the same manner.

Three alternatives were considered for the near-term management of the 771 Closure Project: decommissioning, no action with safe shutdown maintenance, and facility reuse. The alternatives included the evaluation of potential impacts on the human environment. Alternative 1 is selected because decommissioning and the associated hazard reduction support the Rocky Flats Vision of safe, accelerated, cost-effective closure. This alternative also ensures long-term protection of public health and the environment. Short-term impacts on the environment (i.e., impacts occurring during the interval of the action) will be controlled physically and administratively. Currently, the facilities within the 771 Closure Project are scheduled to be deactivated and decommissioned, and the under-building contamination remediated by August 2004. Environmental impacts resulting from the 771 Closure Project will contribute incrementally to potential Site-wide cumulative impacts associated with the Rocky Flat Environmental Technology Site (RFETS or Site) Closure Project. Given the existing industrial setting of the 771 Closure Project, environmental impact issues associated with the project are relatively limited.

For planning purposes, the 771 Closure Project was divided into small manageable groupings of similar equipment and rooms. Thirty-three Dismantlement Sets and 13 Decommissioning Areas were defined for decommissioning activities for the 771 Closure Project.

Consistent with the objectives of RFCA, the 771 Closure Project team will select decommissioning techniques based on a variety of factors, including potential environmental, safety and health (ES&H) hazards, secondary waste generation, and cost-effectiveness. Performance specifications for the

techniques will include meeting the applicable release criteria; minimizing the generation of hazardous, radioactive and secondary wastes; minimizing ES&H impacts; and complying with the applicable or relevant and appropriate requirements (ARARs), and waste acceptance criteria for treatment, storage and disposal facilities.

The 771 Closure Project team will perform decommissioning activities upon completion of appropriate reviews in compliance with Site programs and procedures, including the Site Integrated Work Control Program (IWCP), which incorporates the RFETS Integrated Safety Management System (ISMS), Readiness Determination Program, Integrated Environmental Management Program, and Quality Assurance Program. Site requirements will be applied based on a graded approach (i.e., more rigorous requirements will be applied to facilities with greater hazards). In addition, personnel and environmental monitoring systems will be used, including Site-wide and project-specific air, surface water, and groundwater monitoring systems as described in the RFETS Integrated Environmental Management Program Manual and Site Integrated Monitoring Plan.

Throughout the course of the 771 Closure Project, personnel of the U.S. Department of Energy, Rocky Flats Field Office (DOE), the contractor and subcontractors, and the regulatory agencies will use the RFCA consultative process to establish and maintain effective working relationships with each other and with the general public. Decommissioning activities will be documented in the 771 Closure Project Files, RCRA Operating Record, where appropriate, and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Administrative Record (AR). Upon completion of decommissioning activities and final characterization, a Decommissioning Closeout Report will be prepared and submitted to the Lead Regulatory Agency (LRA) for approval.

1 INTRODUCTION

In 1996, the DOE, the Environmental Protection Agency (EPA), and the CDPHE executed the RFCA.[1] RFCA is the Federal Facility Compliance Agreement and Consent Order negotiated pursuant to the CERCLA[2] and Colorado Hazardous Waste Act (CHWA).[3] RFCA provides the regulatory framework for achieving the goals expressed in the Rocky Flats Vision.[4]

The overriding vision for RFETS is to achieve accelerated cleanup and Site closure in a manner that is safe to workers and the public, and protective of the environment. DOE intends to disposition all special nuclear material (SNM) and wastes, demolish facilities, and remediate contaminated areas to the extent that future land uses are enabled and downstream water supplies are protected.

The 771 Closure Project is comprised of Buildings 771, 774, 714, 714A, 715, 716, 717, 770, 771B, 771C, 771-DT, and a number of outside storage tanks, storage areas, and trailers, all of which are located within the Protected Area (PA) of the Site. Completing the 771 Closure Project is necessary to meet the goals of the RFCA and the Rocky Flats Closure Project Baseline (CPB).

In general, the 771 Closure Project dispositioning will be conducted in the following sequence: deactivation activities will be completed; component removal, size reduction, and decontamination will be conducted; the under building contamination will be remediated; the pre-demolition survey will be conducted; and the building will be demolished. The outbuildings surrounding Buildings 771 and 774 will be conducted in the same manner.

The decommissioning scope in this DOP applies to buildings with significant contamination or hazards (i.e., Type 3 buildings) and buildings without significant contamination or hazards, but in need of decontamination (i.e., Type 2 buildings). Buildings within the Cluster that are free of contamination (i.e., Type 1 buildings) will be decommissioned using Site procedures upon notification to the LRA (CDPHE). Building 771 is a Type 3 facility; Buildings 714, 728, 770, 774, 775, and 771C are Type 2 facilities; and the remaining buildings/trailers located within the 771 Closure Project are classified as Type 1 buildings. Eleven tanks have been classified as Type 2 facilities; these tanks are 176, 182, 183, 184, 185, 194, 195, 292, 293, 774A and 774B. Therefore, the scope of this DOP is limited to Buildings 771, 714, 728, 770, 774, 775, 771C and the eleven Type 2 tanks. Table 1 details all of the facilities associated with the 771 Closure Project, the typing, and if the facility disposition decision is addressed by this DOP modification.

Table 1. 771 Closure Project Facilities

Facility	Type	DOP modification scope
771, plutonium recovery facility, includes 771A, 771 stack, 771/776 tunnel, and 771/774 tunnel	3	Within the scope of the DOP
774, liquid treatment plant	2	Within the scope of the DOP
714, hydrofluoric storage	2	Within the scope of the DOP
714A, hydrofluoric storage	1	Included in the DOP for information purposes

[1] Final Rocky Flats Cleanup Agreement (RFCA), Federal Facility Agreement and Consent Order (CERCLA VIII-96-21, RCRA 3008[h] VIII-96-01, State of Colorado Docket 96-07-19-01), July 19, 1996.

[2] Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 USC 9620 *et seq.*

[3] Colorado Hazardous Waste Act (CHWA), CRS 25-15-101 *et seq.*

[4] The Rocky Flats Vision is contained in Appendix 9 of RFCA.

Table 1. 771 Closure Project Facilities

Facility	Type	DOP modification scope
715, emergency generator #1	1	Included in the DOP for information purposes
716, emergency generator #2	1	Included in the DOP for information purposes
717, magnehelic gauge building/sampling shed	1	Included in the DOP for information purposes
728, process waste pit	2	Within the scope of the DOP
770, office and supply building	2	Within the scope of the DOP
S770, carpenter storage facility	1	Included in the DOP for information purposes
K771N, food building	1	Included in the DOP for information purposes
T771A, office trailer	1	Included in the DOP for information purposes
T771B, office trailer	1	Included in the DOP for information purposes
T771C, showers/locker trailer	1	Included in the DOP for information purposes
T771E, office trailer	1	Included in the DOP for information purposes
T771F, office trailer	1	Included in the DOP for information purposes
T771G, showers/locker trailer	1	Included in the DOP for information purposes
T771H, office trailer	1	Included in the DOP for information purposes
T771J, office trailer	1	Included in the DOP for information purposes
T771K, office trailer	1	Included in the DOP for information purposes
T771L, restroom trailer	1	Included in the DOP for information purposes
T771Q, office trailer	1	Included in the DOP for information purposes
T771R, office trailer	1	Included in the DOP for information purposes
T771T, office trailer	1	Included in the DOP for information purposes
T771MB, mobile breakroom trailer	1	Included in the DOP for information purposes
T771M, Modular network operations center	1	Included in the DOP for information purposes
771B, carpenter shop	1	Included in the DOP for information purposes
771C, nuclear waste packaging and drum counting, includes tanks 309E and 309W	2	Within the scope of the DOP
771-DT, decontamination trailer	1	Included in the DOP for information purposes
772, new breathing air facility	1	Included in the DOP for information purposes
772A, acid storage	1	Included in the DOP for information purposes
773, old 771 guard post	1	Included in the DOP for information purposes
T773S, Skid mounted guard post	1	Included in the DOP for information purposes
774A, steam condensate holding tank	2	Within the scope of the DOP
774B, steam condensate holding tank	2	Within the scope of the DOP
775, sanitary lift station	2	Within the scope of the DOP
T21A, aboveground diesel storage tank	1	Included in the DOP for information purposes
Tank 173, propane storage tank	1	Included in the DOP for information purposes
Tank 174, liquid argon tank	1	Included in the DOP for information purposes
Tank 176, sodium hydroxide tank	2	Within the scope of the DOP

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Table 1. 771 Closure Project Facilities

Facility	Type	DOP modification scope
Tank 179, propane storage tank	1	Included in the DOP for information purposes
Tank 180, cooling water storage tank	1	Included in the DOP for information purposes
Tank 182, neutralized waste second staging holding tank #66	2	Within the scope of the DOP
Tank 183, neutralized waste second staging holding tank #67	2	Within the scope of the DOP
Tank 184, neutralized waste second staging holding tank #68	2	Within the scope of the DOP
Tank 185, potassium hydroxide holding tank #38	2	Within the scope of the DOP
Tank 192, diesel underground storage tank	1	Included in the DOP for information purposes
Tank 193, diesel underground storage tank	1	Included in the DOP for information purposes
Tank 194, hydrofluoric acid storage tank D-44	2	Within the scope of the DOP
Tank 195, hydrofluoric acid storage tank D-45	2	Within the scope of the DOP
Tank 197, propane storage tank	1	Included in the DOP for information purposes
Tank 292, firewater collection tank under B728	2	Within the scope of the DOP
Tank 293, firewater collection tank under B728	2	Within the scope of the DOP

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- Additional physical and historical information about Building 771 (see Section 3.1).
- The Type 2 facilities (throughout the document, but particularly in Sections 3.1, 4.3, 4.4, and 4.7).
- Reference to the RSOPs. This modification satisfies the notification requirements of the RSOPs (throughout the document, but particularly in Sections 4.4 and 4.7).
- Demolition activities (see Section 4.7).
- Under-building contamination remediation activities (see Sections 4.5, 5.1, 7.0, and 8.0).
- A streamlined RCRA closure process, which reduces paperwork (see Section 6.0).
- An exception to the ***RSOP for Recycling Concrete***, which will eliminate the need to stockpile and size reduce the concrete while still meeting the lifetime subsidence requirement of the RSOP (see Section 5.5).

1.1 Alternatives Analysis and Selection

To determine the most efficient path to accelerated cleanup and Site closure, the RFETS Facilities Use Committee evaluated three alternatives for the near- and long-term management of RFETS facilities:

- Alternative 1 - Decommissioning (i.e., component removal, size reduction, decontamination, and demolition),
- Alternative 2 - No action with safe shutdown maintenance (i.e., mothballing), and
- Alternative 3 - Facility reuse.

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Table 2 summarizes the results of this analysis. As discussed in the Facility Assessment for the Industrial Area (IA) Reuse Study, Alternative 3 is not beneficial, because Site cleanup and closure would be deferred but not eliminated. Similarly, Alternative 2 fails to accomplish the Rocky Flats Vision, resulting in an increase in the life-cycle costs associated with Site cleanup and closure.

The alternatives were evaluated for potential impacts on the human environment. Alternative 1 is the selected alternative because decommissioning supports the Rocky Flats Vision of safe, accelerated, cost-effective closure. This alternative also maintains long-term protection of public health and the environment. By removing RFETS facilities and associated contamination, risks currently posed by the 771 Closure Project will be reduced and/or eliminated.

1.2 Decommissioning Under the Rocky Flats Cleanup Agreement

The RFETS Decommissioning Program Plan (DPP)[5] presents the regulatory approach to decommissioning and compliance with RFCA. The Facility Disposition Program Manual (FDPM)[6] establishes the RFETS internal requirements for planning and executing decommissioning activities, including preparation of a Project Management Plan (PMP)[7]. The PMP documents planning activities for each project.

As described in the DPP, buildings are typed based on levels of contamination. Buildings classified as Type 1 are free of contamination; Type 2 buildings do not have significant contamination or hazards, but need some level of decontamination; and Type 3 buildings have significant contamination and/or hazards. Different RFCA decision documents may be used to decommission each building type. The DPP serves as the RFCA decision document for Type 1 buildings; therefore, decommissioning activities are conducted in accordance with RFETS procedures upon notification of the LRA. Type 2 buildings require a separate RFCA decision document in the form of a Proposed Action Memorandum (PAM), Interim Measure/Interim Remedial Action (IM/IRA), or RSOP, or they may be included with Type 3 buildings in an approved DOP.

The decommissioning process begins with internal and external scoping meetings, at which the individual closure project points of contact from the Site and the LRA discuss the scope of the decommissioning project, including goals, schedule, budget, risks, controls, and overall project approach.[8] Reconnaissance level characterization (RLC) identifies radiological, chemical, and physical hazards. The Reconnaissance Level Characterization Report (RLCR) summarizes the results of the RLC. The RLCR provides the basis for determining building types.

Additional characterization may be conducted during decommissioning as facility components are removed and building surfaces are exposed. This type of characterization is referred to as in-process characterization. Data from in-process characterization is used to identify additional hazards; refine approaches to facility component removal, size reduction, decontamination, and demolition; revise waste volume estimates; and modify ES&H controls, as necessary. In-process characterization is also conducted to determine the type and extent of decontamination, and to verify that decontamination has

5 RFETS Decommissioning Program Plan (DPP), Revision 1 (June 21, 1999).

6 RFETS Facility Disposition Program Manual (FDPM), MAN-076-FDPM, Revision 1 (September 24, 1999).

7 The Project Management Plan (PMP) will replace the Project Execution Plan (PEP) in the next revision to the FDPM.

8 The consultative process is described in Part 7 of RFCA (¶¶51-61) and in Section 1.1.1 of the DPP.

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Table 2. Alternatives Analysis Summary

Alternative	Description	Effectiveness	Feasibility	Relative Cost
1-Decommissioning	*Decommissioning* activities will follow specific plans approved by DOE and the LRA. Activities include decontamination, as deemed necessary; equipment dismantlement; size reduction; and demolition of building structures.	Decommissioning is effective in achieving the long-term goals of RFCA. The mortgage costs are eliminated, and the risks and hazards are significantly reduced.	Technology currently exists to achieve the objectives of this alternative. Integration with other Site activities can be accomplished.	Immediate decommissioning results in the lowest life-cycle costs. Once decommissioning is achieved, minimal landlord costs are incurred.
2 – No Action	*No Action* will maintain the 771 Closure Project in its current configuration. No additional equipment would be removed unless the present safe shutdown status of the Cluster is compromised.	*No Action* delays closure activities that must be performed to meet the goals of RFCA. Deferring closure could make funding available to other Site closure activities. However, *No Action* could increase risk to workers and the environment if the integrity of the facility is jeopardized.	*No Action* would disrupt the long-term plans for RFETS.	*No Action* results in higher costs than immediate decommissioning, because landlord costs continue to be incurred until decommissioning begins.
3 – Reuse	*Reuse* of the 771 Closure Project would maintain the facilities in their current configuration. The Site Utilization Review Board would assign a new mission for the facilities, in support of the present Site cleanup mission. Depending on the nature of this mission, removal of equipment may be necessary. No changes would be made before definition of the new mission.	*Reuse* of the 771 Closure Project was evaluated by the RFETS Facility Use Committee, which determined there was no further mission for the Cluster. Use of the Cluster for an alternative off-Site use was evaluated in accordance with the RFCA Preamble (Objective #7), and DOE Order 430.1A. No further use was identified.	Because no new mission has been identified for the Cluster, implementation of this alternative is not administratively feasible.	This alternative results in the greatest life-cycle costs, because the reuse mission would more than likely require expenditures for modifications to the buildings in addition to existing landlord/ surveillance costs. Furthermore, decommissioning costs (adjusted for future value) would still be required.

achieved the applicable decontamination goals and waste acceptance criteria (WAC) of contractor-approved treatment and disposal facilities. In addition, a final verification survey (referred to as a pre-demolition survey) is conducted before demolition to ensure that buildings have been sufficiently decontaminated to meet applicable performance specifications. Facility characterization activities are performed in accordance with the RFETS Decontamination and Decommissioning Characterization Protocol (DDCP)[9], which defines the characterization process, and provides guidance for establishing appropriate data quality objectives and assessing data quality.

Figure 1 summarizes the relationships between RFETS Closure Project documents and drivers, individual closure project characterization packages, decision documents, and reports, including the use of various RSOPs. This figure shows the sequence of the major closure activities, including preparation of essential documents and interfaces between the elements of Site closure (i.e., decommissioning, and ER).

While the regulatory processes and documentation for decommissioning and ER are separate, these two major elements of facility closure interface at various points in the closure process and will sometimes occur concurrently in a building or building cluster. The Industrial Area (IA) Characterization and Remediation Strategy[10] describes the interfaces within the IA. The interfaces apply to buildings identified as having under-building contamination (UBC) and/or contamination of surface and subsurface soils surrounding the building or building cluster. During component removal, size reduction, and decontamination activities, ER will characterize UBC and surrounding soils, as appropriate. The Environmental Restoration IA Sampling and Analysis Plan describes characterization activities. The UBC will be remediated before demolition. Section 4.5 contains additional information on the UBC remediation activity.

1.3 Scope and Purpose

The purpose of this DOP is to describe the decommissioning process for the Type 2 and 3 buildings within the 771 Closure Project. Building 771 is a Type 3 building, as discussed in the DPP. There are three Type 2 Buildings 714, 728, 770, 774, 775, and 771C, and eleven Type 2 tanks. The remaining facilities in the 771 Closure Project are Type 1 facilities and are not included within the scope of this DOP. The current RLCR will be modified to address facility typing. The current RLCR did not address facility typing and was based on historical information. Sampling activities are currently being conducted and will be included in the RLCR revision.

[9] Rocky Flats Environmental Technology Site Decontamination and Decommissioning Characterization Protocol, MAN-077-DDCP (latest revision).

[10] Rocky Flats Environmental Technology Site Industrial Area (IA) Characterization and Remediation Strategy (in preparation).

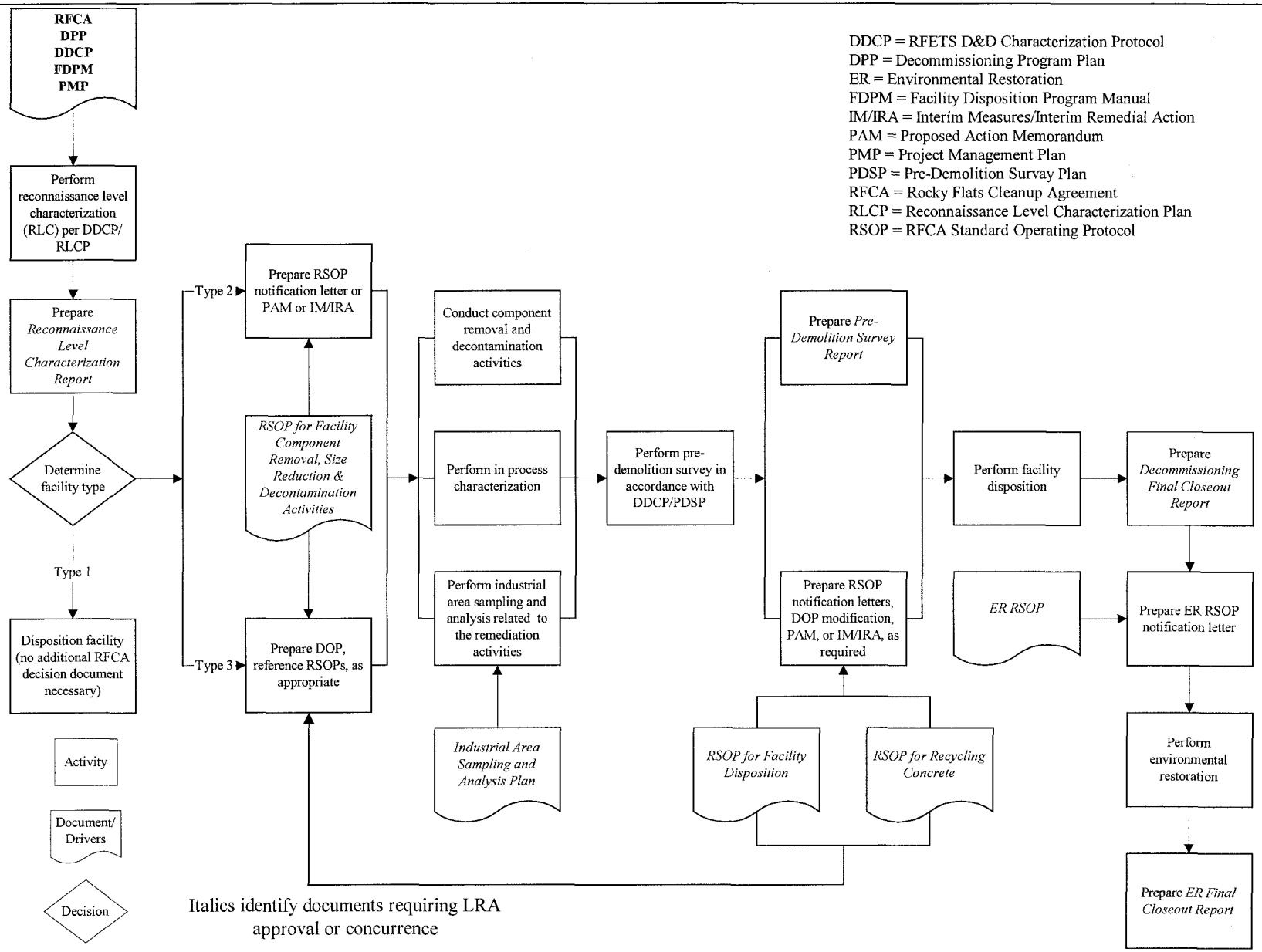

Figure 1. Major Closure Activities & Associated Documents

2 PROJECT ORGANIZATION

This section provides a brief description of the 771 Closure Project organization structure, functions, and interfaces as they pertain to facility management and decommissioning. This information identifies reporting relationships and responsibilities. The organizational structure is not an enforceable part of the DOP. DOE or its contractor may alter the structure without prior notification to or approval of the LRA, and without modifying the DOP. Significant organization changes (e.g., management-level changes) will be shared with the LRA as part of the RFCA consultative process.

2.1 Project Team Organization Structure

The 771 Closure Project will function under an integrated scope, schedule, and cost control system that identifies roles, responsibilities, and interfaces. Figure 2 as described below, depicts the project organization.

- **771 Closure Project Management** – Accountable for the safe planning and execution, and the successful completion of the 771 Closure Project in accordance with applicable standards and requirements.
- **Environment, Safety, Health & Quality** – Provides program, policy, and regulatory guidance; performs inspections; manages radiological operations; coordinates assessments; collects, tracks, and trends Closure Project ESH&Q metrics; and provides engineering services and planning support to the Closure Project team.
- **Administrative Services** – Provides support in the area of human relations and labor relations; assists the Closure Project Manager in resource allocation planning; manages the 771 Closure Project training program; administers the employee compensation program; prepares Closure Project occurrence reports; and provides miscellaneous project administrative support (e.g., document preparation, control, and maintenance and records management).
- **Project Planning/Controls** – Develops Closure Project schedules; identifies resource requirements; maintains the PMP; manages the Closure Project change control process; monitors and reports Closure Project performance; manages work control, including plan of the day (POD) and plan of the week (POW); administers subcontracts and task orders; and purchases equipment and supplies required to support Closure Project activities.
- **Environmental Compliance** – Represents the project to the regulatory agencies; implements environmental stewardship requirements, and represents the project on Site-wide committees.
- **Operations Management** – Operates and maintains the 771 Closure Project to support Closure Project activities; ensures compliance with the Building 771 Basis for Interim Operations (BIO); maintains facility safety category systems (e.g., criticality, fire, ventilation); releases/authorizes work; conducts facility surveillances; maintains facility security; manages facility emergency preparedness; conducts RCRA inspections; and maintains RCRA compliance. Accountable for deactivation activities, decommissioning, and material stewardship activities.
  - Deactivation: Responsible for the removal of SNM holdup and "loose" equipment and materials, such as combustibles, furniture, and waste chemicals; preparation of gloveboxes for decommissioning; removal of organic liquids from equipment and systems; removal of classified material/tooling; and removal glovebox line- and non-line generated material.

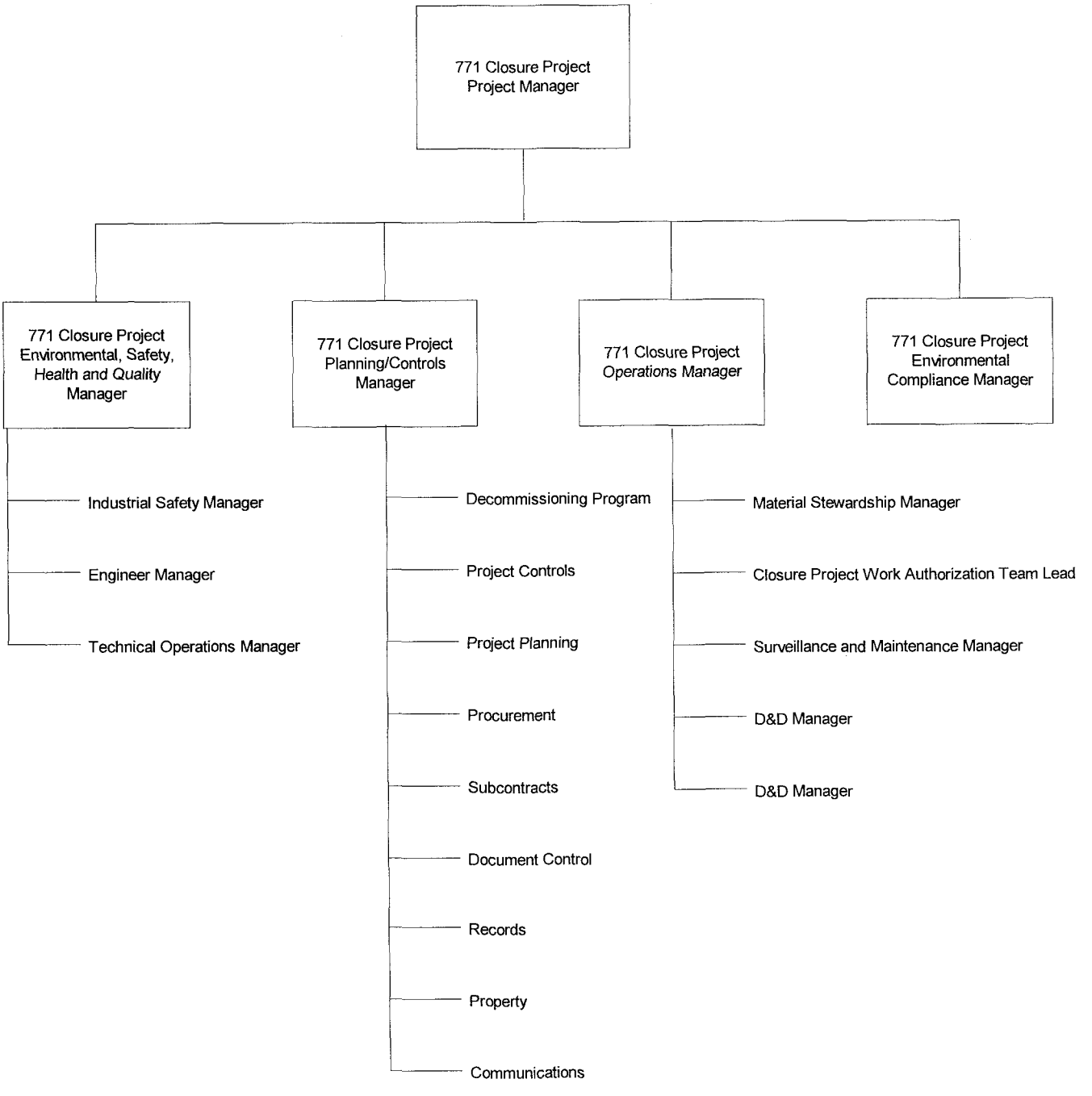

Figure 2. 771 Closure Project Organization

- Decommissioning: Responsible for the removal, size reduction, and decontamination of facility components and for facility demolition as described in this DOP.
- Material Stewardship: Provides commodities to support Closure Project needs; manages wastes and coordinates inter-building material movements through facility disposition; provides nuclear material safeguards support (e.g., SNM inventory, assay, and accounting); and provides non-destructive assay services.

2.2 DOE and LRA Interfaces

As owner of the Site, DOE oversees closure operations; provides direction to the contractor regarding funding and overall direction; and communicates with the regulators and other stakeholders (e.g., the Rocky Flats Citizens Advisory Board [RFCAB], the Rocky Flats Coalition of Local Governments [RFCLOG], and the public) regarding the status of the 771 Closure Project. In addition, DOE is responsible for the enforcement of health and safety provisions of certain federal regulations.

CDPHE is the LRA for the IA, and thus is the LRA for decommissioning activities conducted pursuant to RFCA. EPA is the Support Regulatory Agency in the IA, so both CDPHE and EPA participate in oversight of decommissioning activities at RFETS. Both CDPHE and EPA have executed a Memorandum of Understanding (MOU) with DOE to define their respective roles and responsibilities for oversight of activities conducted in the IA.[11] In that portion of the Site where each is the LRA, CDPHE and EPA have authority to direct DOE to stop work or perform particular tasks required under RFCA when conditions present an immediate risk to public health or the environment.

2.3 Working Relationships

The personnel of DOE, its contractor, subcontractors, CDPHE, and EPA will use the RFCA consultative process[12] to establish and maintain effective working relationships with each other and with the public throughout the decommissioning process. As described in the DPP, the principal aspects of the consultative process are as follows:

- **Timely Sharing of Information** – Information sharing activities will include but need not be limited to: updates of the overall Site CPB, briefings on the development of work plans; briefings on changes to the approved baseline; standing invitations to project planning meetings and pre-evolution briefings (PEBs); and consultations on decommissioning strategy.
- **Collaborative Discussions of Program Changes** – The goal of these collaborative discussions is to raise and resolve issues without delaying decommissioning activities.
- **Designation and Use of Project Points of Contact for Information Exchange and Resolution of Issues** – The LRA, DOE, and the contractor will designate points of contact to facilitate open communication and resolution of issues.
- **Respect for the Roles and Responsibilities of the Parties** – The LRA and DOE will have distinct roles and independent decision-making responsibilities. In general, the role of DOE is to oversee program and Closure Project planning, and to approve the CPB and baseline changes. The role of the LRA is to approve the DOP and other RFCA decision documents, oversee the planning and implementation of work, ensure protection of human health and the environment, and monitor compliance with RFCA and Closure Project ARARs.

[11] Memorandum of Understanding Governing Regulation and Oversight of Department of Energy Activities in the Rocky Flats Environmental Technology Site Industrial Area (IA), executed February 15, 1996.

[12] The consultative process is described in ¶¶51-61 of RFCA, in Appendix 2 of RFCA, and in Section 1.1.1 of the DPP.

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- **Training** – To facilitate the consultative process, the LRA and DOE may develop and provide training to their respective staff and to the contractor, subcontractors, and interested members of the public.

Per RFCA, CDPHE is the LRA for decommissioning activities under CERCLA.[13] To expedite the decommissioning process, the parties have agreed the LRA may exercise authority by participating in the IWCP process. For the purposes of this DOP, this means the LRA has an opportunity to discuss issues and ask questions, but it does not mean the LRA has approval authority for IWCP work packages. DOE and its contractor or subcontractors will advise the LRA of IWCP meetings and roundtable review sessions, and will provide relevant information in a timely manner. The LRA, DOE, and the contractor or subcontractors may use these roundtable review sessions as a forum for RFCA consultation. If this process does not address the LRA's concerns, the LRA may issue a "stop work" order pursuant to RFCA.[14]

[13] See RFCA ¶70.

[14] See RFCA (¶¶176-180).

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3 771 CLOSURE PROJECT DESCRIPTION

The 771 Closure Project is comprised of Building 771 and various support facilities located within the Site's IA. Figure 3 shows the 771 Closure Project and some facilities surrounding the Project. Not all of the facilities within the 771 Closure Project are annotated on the drawing, and not all of the facilities annotated on the drawing are part of the 771 Closure Project. The following sections provide a descriptive overview of the 771 Closure Project.

3.1 Building History and Description

Building 771 is located in the north-central section of RFETS. The building is predominantly constructed of reinforced concrete with some non-production portions of the building constructed of concrete block and fabricated metal. The original building was a two-story structure built into the side of a hill with most of the three sides covered by earth. The fourth side, facing the north, provides the main entrance to the building. The original building measures 262 feet (north to south) by 282 feet (east to west) on the ground floor and 202 feet by 282 feet on the second floor. The building is 31 feet tall, and there are no outside windows in the main building.

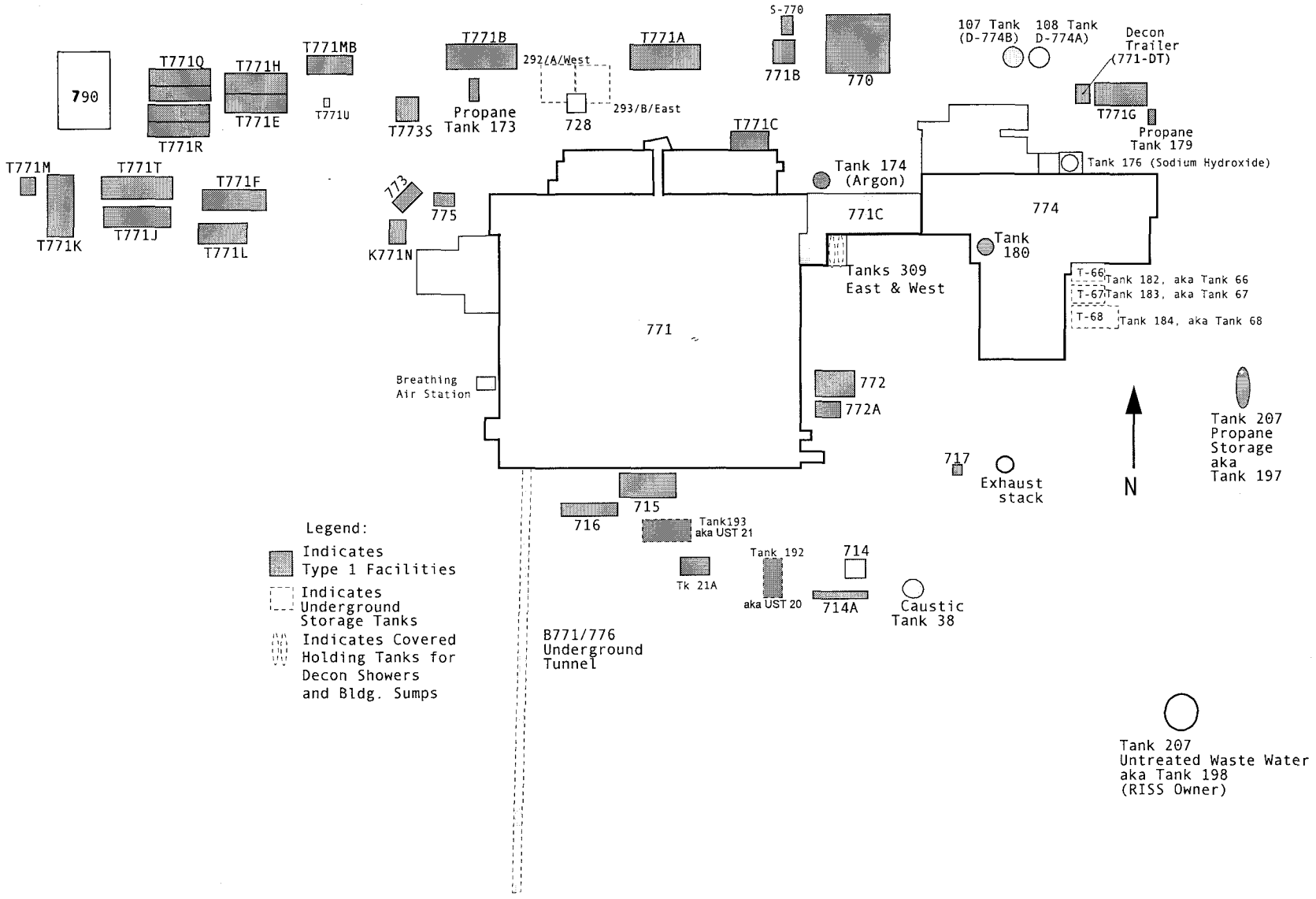
Since completion of the original building, six major additions have been constructed. This series of expansion brought the total area of the building to approximately 151,000 square feet. The first addition was Building 771A, which was constructed in 1962. It is a one-story structure, approximately 41 feet by 110 feet on the north side of the main building. Offices and the cafeteria were moved into Building 771A when it was completed. This addition is separated from the process areas by a hallway and doors, and has a separate ventilation system. Completed in 1966, the 771B office addition is a one-story building, measuring 41 feet by 81 feet. The addition was built on the north side of the main building, west of 771A. The Dock Number 1 addition was added to the northwest side of the main building in 1968. The maintenance shop on the west side of the main building was constructed in 1970. The maintenance shop is 60 feet by 77 feet. The waste packaging facility, Building 771C, was built in 1972, and is a one-story addition to the east side of Building 771, extending to the west side of Building 774. Building 771C was used to store, count, and ship waste; waste packaging and repackaging occurred within Building 771

A plenum deluge catch tank shed, built in 1974, was added on the west side of the original building adjacent to the maintenance shop addition. It is a one-story, 24 feet by 30 feet shed. Inside the shed is a 4,000-gallon capacity filter drainage catch tank and support system to collect the water used while fighting a fire inside the filter plenums or incinerator.

Building 771, the primary facility for plutonium operations, was one of the four major buildings to be constructed and placed in operations at RFETS. Building 771 operations included the chemical and physical operations for recovering plutonium and refining plutonium metal, plutonium chemistry and metallurgical research, and a radiochemical analytical laboratory. The following provides a chronology of Building 771:

1951	Construction begins in November.
1952	Building 771 is occupied.
1953	The first operations begin in May.
1957	On September 11, a glovebox fire occurs in the building, resulting in the transfer of a plutonium foundry, fabrication, and assembly operations to Building 776/777.
1958	A plutonium recovery incinerator begins operations.
1959	The solvent extraction process for plutonium recovery is replaced with an anion exchange process.

Figure 3. 771 Closure Project Facilities



1963/64	Building 771A is constructed to increase plutonium production. Processes were expanded to include an americium recovery line, dissolution lines, filtrate recovery, and batching, calcination, and fluorination operations.
1967	An office expansion, 771B, is added to Building 771.
1970	An addition is completed on the west side of the building to consolidate all maintenance, pipe, sheet metal, and painting activities.
1971	Building 771C, a drum-handling facility, is completed.
1979	Plutonium recovery operations in Building 771 are discontinued. Cleanup operations begin in Building 771.
1980	Building 771 operations are restarted due to material accountability problems in Building 371.
1989	Building 771 plutonium operations are shut down in November as part of an overall plutonium operations shutdown ordered by DOE.

Building 771 Stack is a reinforced concrete stack at the southeast corner of Building 771. The stack has an inside diameter of 10 feet, the base underground is 19 feet across, and the stack rises 150 feet aboveground. The stack wall is 6 inches thick at the top and 11.5 inches thick at the base. The stack provides exhaust for the main filter plenum, which receives exhaust from the high-efficiency particulate air (HEPA) filtration system; the heating, ventilating and air conditioning (HVAC) system; and the incinerator.

Building 774 was designed to treat the liquid process wastes generated in Building 771. Building 774 was originally a two-story rectangular structure of poured-in-place concrete. By 1989, seven additions had been made to the building, resulting in multiple levels varying from one to four stories in height. The additions are constructed of block wall, reinforced concrete, metal-on-metal framing and transite. Because of the additions, floor space increased to 25,000 square feet. The facility is built on a steeply sloping site. The first floor on the north side is 7.5 feet below-grade, and the fourth floor on the south side is 4 feet above-grade.

As RFETS expanded to accommodate increased production of nuclear weapon triggers, Building 774 began processing radioactive acidic and caustic wastes, aqueous and organic wastes, waste oils, and non-radioactive waste photographic solutions. Buildings 111, 112, 130, 371, T371J, 441, 444, 460, 551, 559, 664, 707, 750, 771, 776, 777, 881 and 991 generated one or more waste streams that were processed in Building 774. In 1971, the waste treatment operations in Building 774 were enclosed to provide containment of radioactive airborne particles.

The goal of the Building 774 waste treatment process was to reduce liquid radioactive wastes and convert them into a form suitable for transport off-site for storage and disposal. In general, wastes were either piped directly into Building 774, or transferred in drums, containers, or other types of packaging. The waste entered a series of interconnected tanks designed to treat acidic, caustic and radioactive wastes and separate relatively low-level radioactive effluent from contaminated solids or sludges. Each of the four processes used in the building were tailored to meet certain characteristics of the waste. The waste may have passed through one or more of the following processes:

- Neutralization and filtration of acidic wastes containing large quantities of metal ions or chloride ions. The main purpose of this process was to remove the large quantities of metal hydroxide solids from the waste stream, as these solids hampered the decontamination ability of the succeeding flocculation and clarification processes
- Batch neutralization, precipitation and filtration of acidic wastes containing only small quantities of metal ions or basic wastes containing large quantities of undissolved solids;
- Continuous radioactive decontamination of neutral and caustic wastes; and

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- Solidification of aqueous wastes containing complexing agents, certain radioactive isotopes, or hazardous chemicals that were undesirable in the regular waste system. These wastes were mixed with an absorbent material and Portland cement in barrels for disposal. This process was eventually replaced by the organic and sludge immobilization system. The organic and sludge immobilization system accepted waste oils from any building at the Site that contained transuranic material and converted the liquid waste into solid waste.

The second stage of the decontamination process included two separate radioactive waste decontamination processes. The benefit of segregating the wastes was better utilization of the waste storage ponds based on whether the wastes met standards for radioactive and/or chemical contamination.

The slurry from the decontamination process was held in a slurry tank until it was processed by vacuum filtration to separate the solids from the liquid. The separated solids were mixed with a solidifying agent, and packaged for shipment and long-term storage as transuranic-mixed waste.

The role of Building 774 diminished with the inauguration of the new process waste treatment facility in Building 374. Building 774 continued to process contaminated organic wastes that could not be incinerated, and the liquid process wastes generated in Building 771.

Building 728 was constructed as a sewage lift station with two 25,000-gallon below-grade holding tanks (tanks 292 and 293) for surge purposes, and is located approximately 35 feet north of the west half of the Building 771 office addition. The overall structure of the building is constructed primarily of cast-in-place concrete. The portion of the building that is visible above grade is approximately 7 feet by 15 feet and extends 4.5 feet above adjacent grade. The remainder of the structure extends approximately 12 feet below grade and occupies a footprint of 33.5 feet by 24.5 feet.

3.1.1 System Interfaces

A number of systems are connected to the 771 Closure Project and other facilities on site. The connections will be considered as closure activities are planned, and actions will be taken to prevent unexpected disruption of services. The following bullets detail the systems:

- Electrical - connected to the 515/516 Substation
- Nitrogen - connected to the Nitrogen Plant
- Argon - connected to a tank outside the facility
- Plant Air - received from Building 776
- Breathing Air - received from Building 707/708
- Criticality System - connected to the plant-wide system
- Water - received from Building 124
- Steam - received from Building 443
- Sanitary Sewer - connected to the plant-wide system
- Liquid Process Waste - connected to the plant-wide system
- Natural Gas - connected to the plant-wide system
- Telephone System - connected to the plant-wide system
- Fire Protection Systems - connected to the plant-wide system
- Security Protection Systems - connected to the plant-wide system
- Grounding/lightning system - interconnects Building 771, Building 715 and Building 774.

3.1.2 Physical Interfaces

Three reinforced concrete box tunnels connect Building 771 to other structures:

- A 267-foot tunnel connects Building 771 to Building 776 for purposes of moving materials. The tunnel measures 8 feet by 10 feet by 267 feet. The tunnel has a 6% grade. The walls and roof are 1 foot thick, and the floor is 1.25 feet thick.
- A 170-foot utility tunnel connects Building 771 to Building 774. The tunnel measures 3.5 feet by 3.5 feet by 170 feet.
- A 140-foot exhaust duct tunnel connects Building 771 to the exhaust stack (measures 8 feet by 10 feet by 104 feet). The exhaust tunnel floor is 1 foot thick, and the walls and roof slab are 10 inches thick.

3.2 Current Status

Decommissioning and deactivation activities are proceeding in parallel in Building 771, along with routine maintenance and housekeeping. The stripout of process equipment is well underway. The first group of sets stripped-out freed up floor-space needed for additional size-reduction equipment and staging for decommissioning. These sets were Set 7, Set 25, Set 32, Set 34, Set 37, Set 40, Set 42, and Set 44. Decommissioning proceeded with sets having low contamination levels: Set 35, Set 38A, Set 39, Set 41, Set 46, and Set 50. Decommissioning of these sets is complete and represents about a third of the Building 771 ground floor process area.

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4 PROJECT APPROACH

The decommissioning cost and schedule planning process for the 771 Closure Project has been completed, and the costs and schedules are included in the RFETS Closure Project Baseline (CPB). During the course of the 771 Closure Project, there may be instances where circumstances differ from those predicted. In such cases, planned activities may be revised without revising the CPB or DOP, if the activities are still within the scope of this DOP and the referenced RSOPs consistent with RFCA and the DPP. Significant changes will be shared with the LRA and stakeholders as part of the RFCA consultative process.

4.1 Work Planning and Execution

Decommissioning activities will be planned and executed in accordance with the RFETS Integrated Safety Management (ISM) System, as described in the ***RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities***.

4.2 771 Closure Project Characterization

The 771 Closure Project characterization involves a three-step approach: scoping characterization, RLC, and in-process characterization. The following paragraphs describe each step in more detail. The pre-demolition survey information is documented in Section 4.6. Under building pre-remediation characterization is addressed in Section 4.5.3 and a separate sampling and analysis plan will be developed for the pre-remediation characterization activities.

4.2.1 Scoping Characterization

During scoping characterization, existing records and documents were collected, and present and former Building 771 employees were interviewed to determine the radiological, chemical and physical conditions of the Cluster. Based on the information collected, the 771 Closure Project team proceeded to conduct the RLC.

4.2.2 Reconnaissance Level Characterization

The purpose of RLC is to identify the location and extent of radiological, chemical and physical hazards associated with a facility. The RLC for the 771 Closure Project was completed in August 1998. The RLCR documents results for the 771 Closure Project. Hazards were assessed based on a review of historical records and process knowledge. The RLCR did not contain detailed information on the facilities exterior to Buildings 771 and 774; therefore, the RLCR[15] will be amended and submitted for concurrence on those facilities.

Potential physical hazards within the 771 Closure Project consist of those common to standard industrial environments, including hazards related to energized systems, utilities, gas cylinders, trips and falls, and forklift operations. The buildings have been relatively well maintained and are in good physical condition. Consequently, there are no unique physical hazards associated with any of the buildings within the 771 Closure Project.

[15] This RLCR is being prepared in parallel to this DOP modification and should receive LRA concurrence during the public comment period. The draft report and data packages are available in the administrative record file.

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4.2.3 In-Process Characterization

Additional characterization will be conducted during decommissioning, as facility components are removed and building surfaces are further exposed. This type of characterization is referred to as in-process characterization. Data from in-process characterization is used to identify additional hazards; refine approaches to component removal, size reduction, and decontamination; revise waste volume estimates; and modify ES&H controls, as necessary. In-process characterization is also conducted to verify that decontamination activities have achieved the applicable performance specifications, such as release or reuse criteria and WAC. Detailed information regarding the characterization process and associated requirements is contained in DDCP.[16]

4.3 Dismantlement Sets and Decommissioning Areas

The decommissioning work is broken down into Dismantlement Sets and Decommissioning Areas. In general, Steelworkers complete Dismantlement Sets, and Building Trades complete Decommissioning Areas. Steelworkers conduct work on highly contaminated systems with removal contamination greater than 2,000 disintegrations per minute (dpm). Building Trades generally work in Areas with removable contamination less than 2,000 dpm, unless some ventilation remains in place by the Steelworkers to maintain differential pressure.

4.3.1 Dismantlement Work Set Descriptions

The following table indicates the Set number and a brief description of those Sets. The Sets were established for dismantlement activities. Dismantlement sets include scope to remove process equipment and associated items, but leave in place elements needed for safety and convenience of the workers performing activities in the Areas. For example, fire suppression and alarm systems, ambient lighting, domestic water, sanitary drains, and various tools are among the items that may be left in place after dismantlement. Dismantlement consists of planning, disassembly and removal of equipment components and satisfactory packaging for disposal of the resulting waste. Although the Set descriptions indicate piping, conduit, and ventilation will be removed, there may be some instances where miscellaneous equipment and/or piping, conduit, and ventilation remain for the following reasons:

- It meets the unrestricted release criteria,
- There are no advantages to removing the equipment,
- Due to logistics in the Set, the equipment can be more readily removed during the Area decommissioning, and/or
- The equipment is necessary for safety or coordination reasons.

If equipment is not removed for any of the four reasons stated above, the Set will still be considered complete for dismantlement purposes.

Table 3. Set Descriptions

Set	Description
12	This Set involves the removal and packaging of gloveboxes 8, 8e, and 9; the equipment inside the gloveboxes; and minor external items. Piping, conduit, pneumatic transfer lines, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes.

[16] Rocky Flats Environmental Technology Site Decontamination and Decommissioning Characterization Protocol (M AN-077-DDCP), latest revision.

Table 3. Set Descriptions

Set	Description
22	This Set involves the removal and packaging of gloveboxes 33, 37, 38, and 39 and tanks 5, 176, 177, 630, and 631. In addition, equipment internal to these gloveboxes and tanks will be removed. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes and tanks.
27	This Set involves the removal and packaging of glovebox 30 and tanks D-203, 204, 205, 206, 207, 208, 218, and 219. Items internal to these gloveboxes and tanks, and minor external equipment will also be removed. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes and tanks.
36	This Set involves the removal and packaging of gloveboxes MT-1, MT-2, MT-3, MT-4, MT-5, MT-6, MT-7, and Tanks 1001, 1002, 1003, 1004, 1005, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 1019, 1020, 1013, 1014, 1022, 1023, 1024, 1032, 1033, 1050, 1053, 1062, 1063, 1064, 1065, 1066, 1067, 1069, and 1073. Items internal to the contaminated gloveboxes and tanks will also be removed. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes and tanks.
38	This Set involves the removal and packaging of gloveboxes 201, 205, 206, 207, 208, 209, 213, 214, 215, 221, 223, 224, 225, 227, 228, 241, and 242; and tanks 430 and 431. Equipment internal to the contaminated gloveboxes and tanks will also be removed. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes and tanks.
43	This Set involves the removal and packaging of gloveboxes A-10, 20, 30, 31, 32, 51, 52, 53, and D-2; and tanks D-2, 1803, 1804, 1805, 1807, 1809, 1810, 1811, 1813, 1816, 1817, 1818, 1819, T-5, 6, 7, 8, 21, 22, 25, and 26. Equipment internal to the contaminated gloveboxes and tanks will also be removed. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes and tanks.
60	This Set involves the removal and packaging of gloveboxes 1 North and 1 South and associated equipment inside the gloveboxes. Tanks 705, 706, 713, 714, 715, 716, 764, and 765 will be removed. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes.
61	This Set involves the removal and packaging of gloveboxes 3, 4, 5A, 9A, 22, 5, 11, 14 (new), 12, 13, 14 (old), 15, 16, 16A, 17, and 18. Tanks 7 (mist tank); 6, 967, 548, 549, 550, 551, 552, 609, 610, 509 (new), 510 (new), 529, 530, 547, 548, 553, 554, 949, 950, 951, 952, 953, 954, 955, 500, 501, 502, 503, 504, 505, 506, 509, 510, 544, 545; 70, 71, 72, and 73 will also be removed. Equipment internal to the contaminated gloveboxes and tanks will also be removed. Piping, conduit, pneumatic transfer lines, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes and tanks.
62	This Set involves the removal and packaging of gloveboxes 6, 7, and 7A. The equipment inside the gloveboxes including Nash pump, Hydrofluorinator, and Scrubber will be removed. Piping, conduit, pneumatic transfer lines, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes.
63	This Set involves the removal and packaging of glovebox SR-11 and SR-12, and equipment internal to these gloveboxes. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes and tanks.
64	This Set involves the removal and packaging of the Contamination Control Cell and its associated equipment inside the cell. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the cell.
65	This Set involves the removal and packaging of gloveboxes 43A, 43B, 43C, and 43D; and associated equipment inside the glovebox. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes.
66	This Set involves the removal and packaging of gloveboxes 23, 24, 25, 26, 29, 31, 50, 40, 44, and 42. Tanks 928, 979, 980, 981, 982, D360, 361, 362, 363, 364, 920, 921, 922, 923, 927, 78, 79, 451, 452, 453, 454, 456, 457, 466, 467, 468, 469, 470, 472, 971, 972, 973, 974, 975, 976, D-931, 932, 933, and 934 will also be removed. Equipment internal to the contaminated gloveboxes and tanks will also be removed. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes and tanks.

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Table 3. Set Descriptions

Set	Description
67	This Set involves the removal and packaging of gloveboxes 153A, 153B, 153C, 153D, and 153E; hot cells HC1, HC2, HC3, HC4, HC5, and HC6; and tanks T-3, T-4, 86, 87, 88, and T-153E. Equipment internal to these gloveboxes, hot cells, and tanks will also be removed. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes and tanks.
68	This Set involves the removal and packaging of gloveboxes A-1, A-2, A-3, A-4, and 1097 and a hood; and tanks 1081, 1082, 1083, 1084, 1085, 1086, 1087, 1088, 1090, 1095, and scrubber 1089. Equipment internal to the contaminated gloveboxes and tanks will also be removed. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes and tanks.
69	This Set involves the removal and packaging of gloveboxes E-10, 11, 20, 30, 31, 32, 50, 51, K-10, 20, 30, 50, F-60, 70, 70A, and B-boxes F-20 and F-30; and tanks 80, 81, 82, 83, 84, 85, and scrubber K-30. Equipment internal to the contaminated gloveboxes and tanks will also be removed. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes and tanks.
70	This Set involves the removal and packaging of tanks 309 East and 309 West. Piping, conduit, and ventilation will be removed, as necessary, to facilitate access to the gloveboxes and tanks.
71	This Set involves the removal and packaging of items from the hallways in the limited area, primarily piping and glovebox exhaust piping. To support the release of areas for work, the hallways may be dismantled in two campaigns, east and west.
72	This Set involves the removal and packaging of glovebox exhaust piping from the west side of Building 771, first floor.
74	This Set involves the removal and packaging of Plenum FU-1E, its internal HEPA filters and pre-filters, and the exhaust fans.
75	This Set involves the removal and packaging of Plenum FU-1, its internal HEPA filters and pre-filters, and the exhaust fans.
76	This Set involves the removal and packaging of the Plenum FU-2A, FU-2B, and FU-2C, internal HEPA filters and baffle plates, and the exhaust fans.
77	This Set involves the removal and packaging of the Incinerator Filter Plenum, its internal HEPA filters, and the exhaust fans.
78	This Set involves the removal and packaging of the first stage of HEPA filters and the contaminated metal framework and sheetmetal in the main exhaust plenum and Tank V-2 in Room 190.
82	This Set involves the removal and packaging of a size reduction workstation that was installed in Room 149 to facilitate dismantlement of some of the gloveboxes, tanks, and other large items in Building 771. The Containment Tent, Inner Tent Demolition Chamber, tools and fixtures, Dust Collector, and Air Movers will be removed and packaged for disposal. Piping, conduit, and ventilation ducting from the workstation will also be removed.
83	This Set involves the removal and packaging of a size reduction workstation that was installed in Room 181A to facilitate dismantlement of some of the gloveboxes, tanks, and other large items in Building 771. The Containment Tent, Inner Tent Chamber, tools and fixtures, Air Handling Units, and Duct Collector will be removed and packaged for disposal. Piping, conduit, and ventilation ducting from the workstation will also be removed.
84	This Set involves the removal and packaging of a size reduction workstation that was installed in Room 183 to facilitate dismantlement of some of the gloveboxes, tanks, and other large items in Building 771. The containment tent, inner tent chamber, tools and fixtures, and air movers will be removed and packaged for disposal. Piping, conduit, and ventilation duct from the workstation will also be removed.
91	The Set involves the removal and packaging of equipment in Building 774 Rooms 202 and 203 including gloveboxes 6, 7, 8, and 17; tanks T42, T1A, TIRF, T-2F, T4L and T4R, T 70, T71, T73, and F-5. Sludge in the tanks will also be removed and packaged. The associated items inside and outside the gloveboxes will also be removed and packaged for disposal. Piping, conduit, and ventilation duct will be removed.

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Table 3. Set Descriptions

Set	Description
92	This Set involves the removal and packaging of equipment in Room 210 including gloveboxes 1, 2, 4, 15, 206, Oasis glovebox and the Microwave glovebox; and tanks T1, T2, T7, T8, T13, T14, T374A, NDT1232, NDT1234, and the Condensate Receiver; and Filter Plenum 210. Sludge will also be removed and packaged. Piping, conduit, and ventilation duct will be removed.
93	This Set involves the removal and packaging of equipment in Rooms 102 and 103, including gloveboxes 9, 10, 11, 12, and 13; tanks SP2, 210A, T9, T10 and T12, T74, C1, T11L and T11R, D351, a caustic storage tank, and (new) T40; and other items located in the room. Sludge that remains in the tanks will also be removed and packaged. Piping, conduit, and ventilation ducting will be removed. Sludge will also be removed and packaged. Piping, conduit, exhaust fans and ventilation duct will be removed.
94	This Set involves the removal and packaging of equipment in Rooms 220 and 320 including Filter Plenum 203 and associated HEPA filters and demister; and other items located in the rooms.
95	This Set involves the removal and packaging of plenums FP-201 and FP-202 and several large tanks: T-201, T-202, T203, T-204, and (old) T-40; along with their associated equipment and other items located in the building. Sludge in the tanks will also be removed and packaged. The equipment that pumps waste and groundwater from building sumps to Building 374 is included in this Set. Remaining piping, conduit, and ventilation duct throughout Building 774 will be removed.

4.3.2 Decommissioning Areas

The following table indicates the Area designation and a brief description of those Areas. The Areas involve decontamination, dismantlement, and demolition activities. Some miscellaneous equipment (such as small section of piping, ducting, and/or conduit) may remain in the Areas after decontamination, component removal, and size reduction because it meets the unrestricted release criteria, does not interfere with the pre-demolition survey, and there is no reason to remove it.

Table 4. Area Descriptions

Area	Description
AA	This Area involves the corridor B office area and corridor F office area. Corridor B office area includes corridor B and offices 116, 117, 117A, 118, 118A, 119, 119A, 119B, 119C, 119D, 124, 125, 125A, 125B, 125C, 125D, 125E, 126, 126A, and 126B. Corridor F office area decommissioning includes rooms 103, 104, 105, 105A, 105B, 107, 109, 110, 110A and 110B; corridor F; and a criticality alarm panel. The activities associated with the Area decommissioning include the removal of utilities piping; remaining ventilation systems, interior partitions, and drop ceilings; decontamination; and the demolition of the office building structure.
AB	This Area includes rooms 301, 302, 303, 304, 305, 306 and 308; drum counters; scales; exhaust fans; and motors. The activities associated with the Area decommissioning include dismantlement of the annex area; removal of utilities piping, remaining ventilation systems, interior partitions, and drop ceilings; decontamination; and the demolition of the annex building structure.
AC	This Area includes rooms 120, 122, 123, 123B, 123C, 133 and 135; the men and women's locker rooms; the janitor's closet; and the laundry cage in the men's locker room. The activities associated with the Area decommissioning include dismantlement of the locker room area; removal of utilities piping and remaining ventilation systems; and decontamination.
AD	This Area includes rooms 129, 129A, 129B, 129C, 129D, 129F, 130, 131, 132, and 132A; Dock 2; and unwanted machine tools. The activities associated with the Area decommissioning include dismantlement of the 129 maintenance area; removal of utilities piping, remaining ventilation systems, interior partitions and drop ceilings; decontamination; and the demolition of the Annex building structure.

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Table 4. Area Descriptions

Area	Description
AE	This Area includes room 157. The activities associated with the Area decommissioning include dismantlement of the 157 stock room area and removal of utilities piping, remaining ventilation systems, interior non-load bearing CMU, and drywall partitions. Interior surfaces will have paint removed to facilitate pre-demolition survey (PDS). In-process characterization will identify areas of surficial contamination, and surface decontamination will remove surface contamination. An estimated 25% of floor slabs will be removed during decontamination activities.
AF	This Area includes rooms 135A, 135B, 141, 151, 151A, 151B, 151C, 151E, 151F, and 152; the elevator area; 151 radiation control area; the RCT areas; SAAM panel; and decontamination showers. The elevator area includes rooms 142, 145, and 242; electrical control panel; elevator cage; and hydraulic unit. The activities associated with the Area decommissioning include the removal of utilities piping, remaining ventilation systems, interior non-load bearing CMU, and drywall partitions. Interior surfaces will have paint removed to facilitate PDS. In-process characterization will identify areas of surficial contamination, and surface decontamination (scabbling) will remove contamination. Floors will be removed from rooms 114, 141, and 149. Walls and the ceiling will also be removed in room 141.
AG	This Area includes the Building 771 stack, Building 771 stack tunnel, Building 776 tunnel, and Building 774 tunnel. The activities associated with the Area decommissioning include the removal of stainless steel liner in the 771 stack tunnel, Building 776 tunnel, and Building 774 tunnel; utilities piping, remaining ventilation systems and disposition. Interior surfaces will have paint removed to facilitate PDS. In-process characterization will identify areas of surficial contamination, and surface decontamination (scabbling) will remove contamination. It is anticipated that the floors and lower portion of the walls will need to be decontaminated.
AH	This Area includes room 283 east, exhaust unit S-8, air handling unit AHU-2, and exhaust fans #5 and #6. This area also includes rooms 283A, 283B, 283H, 283I, 283J, and 283 center and exhaust fans #2, #3, and #4. The west 283 HVAC exhaust and utilities area includes rooms 283C, 283D, 283E, 283F, 283G, and 283 west; air handling unit AHU-3, exhaust fan #1, and the uninterruptible power supply (UPS) battery system. The activities associated with the Area decommissioning include the removal of utilities piping and remaining ventilation systems. Interior surfaces will have paint removed to facilitate PDS. In-process characterization will identify areas of surficial contamination, and surface decontamination (scabbling) will remove contamination. In addition, the activities associated with the Area decommissioning include the removal and packaging of equipment on the Building 771 second floor except the plenums (see sets 74 through 78 for plenums scope). The second floor equipment includes the main supply plenum, test plenum, fans from the filter plenums, bag-filters, air-washers, deep-bed filters, knock-out, and condensate tanks. Control panels, transformers, electrical switch gear, motors, pumps, various instruments, racks, and various tools such as portable lights, welders, ladders, air movers, tool boxes, dollies, cabinets, desks, lockers, and other items will also be removed. Pipes, conduit, and ventilation duct will be removed as part of the Area decommissioning.
AJ	This Area includes outbuildings not addressed elsewhere. The activities associated with the Area decommissioning include decontamination and demolition of closure project outbuildings, underground storage tanks (UST's), tanks and pads, and appurtenant structure.
AL	The activities associated with the Area decommissioning include PDS and demolition of Building 771 and the connecting tunnels.
AM	This Area includes Building 774. Building 774 includes glovebox 5 with its associated microwave chiller and tank T2F in Room 202; glovebox 355 in Room 103; reagent tanks and pumps in room 241; oil storage tanks 102, 103, and 104; the caustic storage tank outside Building 774 hatch entry; and miscellaneous items in rooms 250 and 212. The plenum in Room 203, and other items located in Rooms 301, 302, 303, 303A, 304, 305, 306, 320, 321, 200, 204, 205, 206, 207, 208, 209, and 220 and the 322 storage shed are also contained within this Area. The activities associated with the Area decommissioning include removal of utilities piping, remaining ventilation systems, interior non-load bearing CMU, and drywall partition; decontamination; PDS; and demolition. Interior surfaces will have paint removed to facilitate PDS.

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Table 4. Area Descriptions

Area	Description
AN	This Area includes the indirect/direct evaporative cooling area. The indirect/direct evaporative cooling area includes the 8 new intake air systems, piping, valves, electrical distribution and control panels, and the metal building. The activities associated with the Area decommissioning include the removal of equipment and appurtenant structure associated with the indirect/direct evaporative cooling systems.

4.4 Facility Component Removal, Size Reduction, and Decontamination

This section contains information on the 771 Closure Project approach to component removal, size reduction, and decontamination. In some instances, the sequences of activities and methods are specified. The information contained within these sections is based on the current planning baseline. The actual sequence and methods used may differ from what is indicated in this section; as long as the activity is within the scope of the ***RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities***, there will be no modification to the DOP. Throughout this section, statements are made on what type of waste an activity will create. These statements are based on process knowledge and included for information purposes. All waste will be characterized and packaged in accordance with Site Waste Management Programs.

4.4.1 Component Removal and Size Reduction

For the purposes of this DOP, component removal refers to the physical disassembly, size reduction (if necessary), and removal of facility components, including gloveboxes, tanks and ancillary piping, fume hoods, ventilation and filtration systems, other utilities and equipment, walls, ceilings, floors, and structural members. These items must be removed to allow access to building surfaces for decontamination and PDS. Component removal and size reduction will be conducted in accordance with the ***RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities***.

Initially, as work begins in each room, machinery and some equipment will be removed. These are items that are at floor level, generally do not require size reduction, and are not attached to critical safety systems (i.e., zone I ventilation, zone II ventilation and criticality alarms). These items will be isolated from utilities and any other potential energy-producing systems and removed as waste or a recyclable product.

Many items will require size reduction and/or decontamination to place them into waste containers. The central size-reduction area within the building will be used for components that can be moved. Items that are too large to move will be size reduced in place.

Equipment contaminated above the High Contamination Level, as defined in the Site Radiological Manual, will be removed during dismantlement. Consequently, the Sets contain the process equipment such as gloveboxes, tanks, process piping, and other pieces of process-related equipment. Each Dismantlement Set is organized around a room or process to aid in the engineering required to remove the Set. Generally, the following is the sequence for removal of a typical, Dismantlement Set; these steps are typical, and some steps may not be required:

- Execute work package prerequisites;
- Isolate the work area using Lock-out/Tag-out;

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- Return gloveboxes to service;
- Remove equipment internal to the glovebox;
- Remove utility and external equipment;
- Decontaminate the glovebox;
- Survey for radiological and non-radiological contamination;
- Apply fixatives;
- Remove the glovebox from ventilation;
- Erect soft-sided containment, if necessary;
- Remove structural support;
- Separate glovebox, if required;
- Transport glovebox to size-reduction area, if necessary; and
- Size reduce glovebox and package as waste.

In addition, if there are tanks or other pieces of large process equipment connected to a glovebox system, this equipment will be disconnected and removed before or in conjunction with glovebox removal. The process described above is generally applicable to these items as well.

4.4.2 Decontamination

Decontamination is defined as the removal of contamination from building and equipment surfaces and beneath surfaces by manual, mechanical, chemical, or other means. The purpose of decontamination is to reduce exposure to radiological and chemical hazards, minimize the generation of radioactive and hazardous waste, and to salvage equipment and materials for future use. Decontamination will be conducted in accordance with the ***RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities***. The decontamination will be performed in the following general sequence.

At the close of the Dismantlement Set activities, the areas will be empty of gloveboxes, tanks and systems providing services to gloveboxes and tanks. The electrical systems supplying lighting and distribution will remain in place, and the Zone I and II ventilation systems will have been removed. Asbestos removal internal to the structure will be completed, and the areas will be isolated from the balance of the structure to allow decontamination activities.

Room or area walls will be used as containment barriers, or temporary containment barriers will be installed to ensure that decontamination activities are isolated from the balance of the structure. This will ensure that migration of contamination can not occur to the balance of the structure. Mobile HEPA ventilation will be installed for ventilation of areas requiring decontamination. HEPA ventilation exhausted to the environment will be monitored, or exhausted to the building ventilation systems. Dismantlement activities associated with Sets will be accomplished before commencement of dismantlement and decontamination activities associated with the Decommissioning Areas.

Following Dismantlement Set activities, remaining electrical systems will be removed. Temporary electrical services will be installed. Lighting fixtures will be removed, acoustical and metal-pan ceiling fixtures removed and packaged for disposal.

Remaining safety systems will be removed back to the Area boundary, and any necessary modifications performed to replace required safety items.

Remaining utility supply systems will be removed to the Area boundary; and temporary services for support of the decontamination activities installed for supply to the Area.

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Interior, non-load bearing block walls and/or gypsum partition walls will be removed and packaged for disposal as low-level waste (LLW).

Before the characterization of the interior concrete surface areas, and physical decontamination activities, painted surfaces in contaminated areas will be abrasively cleaned of paint. It is anticipated that removed material will be packaged for disposal as transuranic waste (TRU) or TRU mixed waste.

Scaffolding will be installed throughout the facility, as necessary, to gain access to higher elevation work. Ceilings and upper walls will be decontaminated prior to lower walls and floors. Concrete ceilings will be decontaminated as necessary, "metal deck" ceilings wiped down, initial surveys completed, and the decontaminated surfaces covered to protect against re-contamination. In metal decking areas, the "pigeon holes" (open areas due to the shape of the decking materials) will be physically covered to prevent re-contamination.

Upper and lower walls will be decontaminated as necessary and preliminary surveys completed. Scaffolding will be removed to allow decontamination and/or removal of the floor surfaces.

Floor areas requiring removal of contaminants exhibiting penetration of less than one inch will be mechanically scabbled to remove contamination. Surface cracks in the floor slabs will be decontaminated with "crack chaser" scabbling equipment.

Floor slabs exhibiting penetration of contaminants greater than one inch will be removed and disposed of as LLW or low-level mixed waste (LLMW). This may include the floor areas within Rooms 114 and 149 and an estimated 25% of the remaining floor areas in Decommissioning Area AE. Surface contamination will be "fixed," and the slabs removed using concrete floor saws and appropriate lifting devices. Piping will be flushed before pipe removal activities are initiated. Piping uncovered during floor removal will be removed during decommissioning. Piping under the slab will be remediated by ER. Floor drains and "below-slab" services not exposed by floor removal will be isolated and identified for removal by ER.

Areas exhibiting residual contamination following the initial pre-demolition surveys will be physically isolated, decontaminated and re-surveyed. Waste will be removed from the Area, pre-certified, and staged outside the Area boundary.

Pre-demolition surveys of interior surface areas will be performed, and permanent isolation barriers for decontaminated Areas will be installed to prevent migration of contaminants into the decontaminated areas.

Systems and equipment attached to the exterior surfaces of the structure will be removed, and initial surveys completed. Areas of the exterior surface requiring decontamination will be decontaminated using local-area containment and ventilation.

Before demolition activities, removal of asbestos-containing materials in the roofs will be accomplished.

Following decontamination of the exterior structure, and removal of remaining asbestos roofing materials, pre-demolition surveys of the building structure will be completed.

4.4.3 Removal of Building Ventilation and Filtration Systems

Building ventilation and filtration systems will be removed in accordance with the ***RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities***. Historically, the ventilation zones are defined as Zone I - Glovebox exhaust; Zone II - Room exhaust; Zone III - Building corridor exhaust; and Zone IV - Office and front area exhaust. These definitions are based on the negative pressure differentials that are maintained for certain equipment and areas. The zones have been redefined for planning purposes to Zone 1 - Glovebox exhaust and Zone 2 – will contain all other ventilation.

The HVAC system controls volume, temperature, and humidity of the atmosphere, while maintaining confinement of radioactive materials by means of pressure differential control and exhaust air filtration. Air pressure is increasingly negative from the hallways, to the rooms where radioactive materials are being used, to the gloveboxes. Pressure differentials are maintained through the control of supply and exhaust air. Airborne plutonium would have to pass upstream against several stages of increasing pressure before it could escape to the environment. Automatic electrical interlocks prevent the building from becoming pressurized.

Within Building 771, twelve systems supply the airflow requirements of 210,000 to 250,000 cubic feet per minute under normal operating conditions. Outside air is taken in on the second floor through bird screens and pneumatically operated inlet dampers, and filtered and washed. Standard air washing equipment scrubs and cools the air. Airflow is controlled by a set of dampers at each supply fan, and backflow dampers are provided. Air flows through ductwork to the respective areas.

As facility components are removed and/or decontaminated, workers will complete the removal of remaining utilities, including building ventilation and filtration systems. Due to the potential for radiological and/or chemical contamination within system ductwork, there is a possibility for releases of hazardous and/or radioactive materials to the environment. Therefore, the removal sequence is extremely important and will be planned carefully for each building/Area. Although the approach may differ on a building-by-building or Area-by-Area basis, the general removal sequence described below will be utilized:

- Airflow studies will be performed in accordance with the Radiological Safety Practices Manual to determine feasibility of the removal action and identify potential problems and options.
- Zone I plenums will be maintained until the gloveboxes and ductwork have been stripped out.
- Glovebox removal will be initiated at the glovebox farthest away from the plenum, and work will continue toward the plenum to ensure the air continues to flow from areas of least contamination to areas of higher contamination. There may be exceptions to this rule depending on access restrictions.
- Air studies will continue throughout the glovebox removal to ensure the zones are balanced and negative pressure is maintained in accordance with the authorization basis. Airflow will be balanced using the Zone II system and/or temporary ventilation and filtration systems.
- Once the Zone I gloveboxes and ductwork have been removed, the areas serviced by that ventilation can be decontaminated to the unrestricted release criteria.
- Plenums and associated ductwork will be removed.
- Airflow will be balanced, if necessary, using temporary ventilation and filtration systems.

4.4.4 Room 141

Room 141, sometimes referred to as an "infinity room", was originally constructed to function as an SNM storage vault, and subsequently re-configured to function as a pump room. Operational problems with the pumping operation resulted in radionuclide bearing acidic solution spills contaminating the floor and the pump pedestals. The resulting contamination was so high that the operation was eventually phased out.

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Room 141 will be completely removed. Following second floor decontamination activities, the elevated floor structure that surrounds Room 141 will be removed. The interior of Room 141 will be fogged, and a complete containment structure will be constructed to facilitate removal of concrete structural material. Concrete walls, ceiling, and floors will be removed, dispositioned as TRU and LLW, and subsurface media will be protected prior to transfer to ER for remediation activities. Subsequent remediation actions to remove contaminated concrete resulted in high airborne concentrations, and the room was eventually sealed and abandoned. Lead shielding was present during the pump operation periods. The acid spills may have deposited some lead contamination in the concrete structures. Room 141 will be removed instead of decontaminated; removal will be conducted in accordance with the ***RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities***. In general, Room 141 removal will be performed in the following sequence.

- Specialized lifting equipment will be installed at the second floor roof level, and certified for capacity, to accommodate the removal of appropriate sections of floor, ceiling, and wall materials.
- Decontamination activities on the second floor area above Room 141 will need to be completed before the start of Room 141 removal. Second-floor walls and floors (including any supporting metal floor deck) between Columns 12 and 14.5, and Columns M and S will be removed back to within five feet of the supporting beams and girders around the footprint of Room 141. The west walls of the stairwell, Rooms 144 and 244, and the elevator shaft will remain. This will require the removal of approximately 1,100 square feet of second floor area and the supporting metal deck. Removed floor sections will be surveyed and dispositioned. Appropriate safety systems will be installed to prevent falls.
- The six-inch downspout for the stormsewer drain system located on the exterior of the south wall of Room 114 will be re-routed from the roof drains, the riser sections removed, and the system capped.
- To maintain the integrity of the Building 771 structure for segmentation activities, additional shoring materials will be added to the north side of Columns P13 and P14, which constitute an integral portion of the north wall of Room 141. Columns P13 and P14 will be left in place, and concrete wall sections will be removed up to, but not including, these columns.
- A three-stage, HEPA ventilated containment structure will be erected from the first-floor elevation to the interior of the building roof. The containment will be erected to surround the exterior of Room 141, using the existing stairwell and elevator shaft walls. The containment will maintain negative air pressure to the balance of the building. Scaffolding will be installed around the exterior north, south and east walls of Room 141 to allow access to the walls and ceiling concrete of the room.
- An adapter to insert a passive aerosol fog will be installed in the door of the room from the hall, and the interior of Room 141 will be "fogged" to encapsulate the contaminants on the interior surfaces of the room and reduce the possibility for airborne contamination. A portable HEPA ventilator will be installed to maintain the room air pressure negative to the outer containment. The final task before entry will be the spraying of a final fixative covering on concrete surfaces within the room. The ability to "re-fog" the room will be maintained during the removal operation. The room will be entered, and any loose items will be removed and packaged for disposal as TRU material. Pipes and conduit connected to walls in the room will be severed or removed. Any systems traversing the room will be isolated and prepared for removal.
- The ceiling concrete will be reinforced with an additional structural member to prevent movement and provide support of the concrete as it is removed. Concrete anchors for installation of lifting eyes will be installed in each section before segmenting operations.
- Concrete wall saws will be used to cut the ceiling and wall structure into blocks. Cutting operations will penetrate the surfaces only deep enough to sever the reinforcing bars of the

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concrete. This will reduce the possibility of cooling water from the saw being introduced to the interior contaminated surfaces. Ceiling concrete will be segmented into blocks of approximately 3 feet by 3 feet. Following segmentation of the ceiling structure, concrete blocks will be "cracked," removed in sequence, and packaged for disposal. Temporary HEPA ventilation will be placed in the areas being "cracked" to prevent any airborne contamination arising from the cracking and removal process. Ceiling concrete will be packaged as LLW. A temporary ceiling cover will be installed to replace removed ceiling concrete and maintain containment integrity for the room.

- The north, south and west walls of Room 141 will be segmented with concrete wall saws, and removed in sequence from top to bottom. Concrete anchors will be installed in the top surfaces of blocks to facilitate lifting. Cutting operations will penetrate the surfaces only deep enough to sever the reinforcing bars of the concrete. This will reduce the possibility of cooling water from the saw being introduced to the interior contaminated surfaces. The walls will be segmented into of blocks approximately 3 feet by 3 feet. Walls will be removed with the exception of Columns P13 and P14, which are structurally integral to the north wall of Room 141. These columns will be wrapped with plastic covering as concrete removal proceeds from top to bottom to prevent migration of contamination from the interior surface. Following segmentation, concrete blocks will be "cracked", removed in sequence, and packaged for disposal. Temporary HEPA ventilation will be placed in the areas being "cracked" to prevent airborne contamination. Removed concrete from the upper walls will be packaged for disposal as LLW. Removed concrete from the lower walls will be packaged for disposal as TRU material.
- Scaffolding installed for the removal of the walls and ceiling concrete, and a temporary flooring of plywood will be installed to prevent migration of contamination from the floor to other surfaces.
- Scaffolding will be installed around Columns P13 and P14 to facilitate decontamination activities. Concrete surfaces interior to Room 141 will be scarified using chipping hammers, and if warranted by structural considerations, additional shoring will be installed at these columns.
- The east wall of Room 141, comprising the structure of the elevator shaft, will remain. Temporary removal of service of the elevator will be required. Lower sections of the elevator will be removed as necessary, following the placement of reinforcement for the wall, and an appropriate containment structure.
- Floor slabs will be segmented using a floor saw. Concrete anchors will be installed for lifting eyes, and the slabs will be removed and packaged for disposal as TRU material. Process drain piping below the slab will be stabilized, segmented and removed. Remaining process drain piping not removed will be capped and abandoned in place for management by ER.

4.5 Environmental Restoration

This section meets the requirements for a PAM developed for accelerated actions under the RFCA (DOE, 1996). The ARARs associated with these activities are detailed in Section 7, the environmental consequences are detailed in Section 8, and the waste types are detailed in Section 5.1. The source removal action will be performed in association with the 771 Closure Project decommissioning and will address the UBC associated with Buildings 770, 771, 771C and 774, and the process waste lines beneath these buildings. Building 771C is a small addition to Building 771 and is addressed throughout this section as a part of Building 771. In addition, the tunnels are connected and part of Building 771 and will be considered part of Building 771 for characterization and remediation purposes. Remediation of Individual Hazardous Substance Sites (IHSSs), Potential Areas of Concern (PACs), and/or soils associated with these buildings but not part of the UBC will be addressed by the ER RSOP or another ER

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decision document, and is not part of the scope of this remedial action. Groundwater contamination in the area will be addressed as part of the Industrial Area Plume, and not as part of this remedial action.

The extent of the UBC will be determined during implementation of the Industrial Area Sampling and Analysis Plan (IASAP) (in preparation). The RCRA closure of the Site's process waste lines is not a part of this action. The RCRA closure of all of the old process waste lines will take place when IHSS 121 – Original Process Waste Lines is dispositioned. Following completion of UBC remediation for the four buildings, foundation drains will be addressed during remediation of the IHSSs associated with the 771 Closure Project. The drains will be interrupted and backfilled or otherwise blocked to prevent a potential conduit to the drainage.

The excavation of contaminated soils from under the footprint defined by Buildings 770, 771, 771C, and 774 is dependent on the completion of preliminary UBC characterization and the decommissioning of these buildings. Work is scheduled to commence immediately following removal of the slab overlying identified areas of contamination. Data compilation and reporting are scheduled to be completed by the end of the summer of 2001. Any delays, scope or budget changes affect these dates, but this schedule is not enforceable and changes do not require modifications to this DOP.

If a remedial action other than source removal is developed, then it will be proposed to the LRA as a modification to this DOP or as an additional ER RFCA Decision Document. If the UBC characterization indicates that the contamination has migrated outside of the exterior footings of the building, and if it is determined that it appropriate to conduct the remediation outside the facility footprint during the UBC remediation; then the DOP may be modified or an additional ER RFCA Decision Document may be prepared to cover the scope of the remediation outside the facility footprint.

4.5.1 Project Description

The buildings' history and description are detailed in Section 3.0, and the data are summarized here only as it applies to the proposed remedial action. Building 771 was placed into service in 1953 and was the original plutonium component production facility. After 1957, the building was used for chemical recovery of plutonium and americium from manufacturing residues and scrap metal (DOE, 1992). The building footprint is approximately 151,000 square feet. Building 774 was placed into service in 1953 and was used for the treatment of highly radioactive aqueous wastes, low-level radioactive aqueous wastes, waste oils, and non-radioactive waste photographic solutions (DOE, 1992). The building footprint is approximately 25,000 square feet. Building 770 was placed into service in 1953 for radioactive operations waste storage. The building footprint is approximately 2,900 square feet.

Based on the suspected presence of soils contaminated above RFCA Tier 1 Action Levels beneath Building 771, a remedial action is planned. As described in the Action Level Framework, Tier 1 action level exceedances are expected to trigger a source removal. Therefore, the planned remedial action is a source removal of contaminated soils above Tier 1 action levels. The extent of the remedial action will be determined based on characterization activities that will be defined in the IASAP. Excavation of the contaminated soils has been successfully used for remediation of soils at Rocky Flats and was selected for this remedial action. The no action alternative is not expected to be protective of surface water because the suspected presence of contamination above RFCA Tier 1 Action Levels.

The source removal will remediate soils to the extent practicable. If field conditions determine that all soils above Tier I action levels cannot be removed, the Lead Regulatory Agency will be consulted prior to discontinuing the remedial action at this location. Following the source removal action, the soils will be appropriately dispositioned offsite. Groundwater contamination will be addressed separately and not as part of this remedial action.

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The pre-existing groundwater wells designated as part of the IMP Building D&D Monitoring Program will continue to be utilized as performance monitoring wells. These are wells P219089, 20898,18199, 40599, 40699, 40799, 40899, 41499, and 41599.

4.5.2 Hydrogeological Setting

Buildings 771 and 774 were constructed after excavation into the low permeability claystone bedrock in the area. Building 770 is constructed on a slab. The claystone under Buildings 771 and 774 limits the vertical migration of contaminants that may have been released into the environment, including potential volatile organic compound (VOC) contamination. The top of bedrock surface before construction of Building 771 sloped to the northeast and was approximately 10 to 15 feet below ground surface. Excavation during construction of these buildings altered this surface, and now the bedrock surface is at depths of 20 feet or more. Construction may have also created a localized depression in the bedrock next to the buildings.

4.5.3 Data Summary

No UBC characterization data are available at this time. However, there have been known or suspected releases, spills and leaks that potentially have resulted in radioactive, organic contamination of the soil underlying Buildings 771 and 774. One known spill potentially has caused radionuclide contamination in the soil underlying Building 770.

For Buildings 771 and 774, it is anticipated that UBC will be limited to the immediate underlying backfill material. This is because the building foundations are below the water table resulting in a hydraulic gradient upward into the building and associated footing drains. The flow of groundwater into the building and/or footing drains, instead of away from the building, limits contaminant migration. In addition, the bedrock beneath the buildings is most likely weathered claystone of the Arapahoe or Laramie Formations (EG&G, 1995a). This material has a mean hydraulic conductivity of 8.82×10^{-7} centimeters per second, which indicates that neither groundwater nor contamination are readily transported in this area (EG&G, 1995b).

Using process knowledge, the potential contaminants of concern (PCOCs) for UBC at Buildings 771 and 774 are expected to be the chemicals and radionuclides historically used in these Buildings and their degradation products. The PCOC list includes contaminants from potential leaks from the original process waste lines and spills inside the buildings. Table 5 lists the PCOCs along with the RFCA action levels. There may be other analytes, such as fission products, present in minor amounts that are also associated with process waste releases. However, remediation of the contaminants listed in Table 5 is anticipated to effectively remediate other associated analytes. This list will be revised based on data collected during UBC characterization. If characterization activities determine that PCOCs are present in the UBC above RFCA action levels, excavation is planned. If characterization of the UBC determines that soils are less than the action levels provided below, then no action is planned.

Table 5. Potential Contaminants of Concern and Clean-up Target Levels

Contaminant	RFCA Tier 1 Soil Action Levels	RFCA Tier 2 Soil Action Levels
Carbon Tetrachloride	3.56 mg/kg	0.0356 mg/kg
Tetrachloroethene	3.15 mg/kg	0.0315 mg/kg
Trichloroethene	3.28 mg/kg	0.0328 mg/kg
1,1,1-Trichloroethane	94.8 mg/kg	0.948 mg/kg
Xylene	9,740 mg/kg	97.4 mg/kg

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Table 5. Potential Contaminants of Concern and Clean-up Target Levels

Contaminant	RFCA Tier 1 Soil Action Levels	RFCA Tier 2 Soil Action Levels
Chromium (III)	8,720 mg/kg	8,720 mg/kg
Cadmium	2,040 mg/kg	2,040 mg/kg
Beryllium	133 mg/kg	1.33 mg/kg
Silver	10,200 mg/kg	10,200 mg/kg
Lead	1,000 mg/kg	1,000 mg/kg
Nickel	40,900 mg/kg	40,900 mg/kg
Copper	75,600 mg/kg	75,600 mg/kg
Mercury	613 mg/kg	613 mg/kg
Cyanide	40,900 mg/kg	40,900 mg/kg
Hydraulic oil	No action level[a]	No action level[a]
Fuel oil	No action level[a]	No action level[a]
PCBs	531 mg/kg	5.31 mg/kg
Americium 241	101 pCi/g[b]	21 pCi/g[b]
Plutonium 239/240	562 pCi/g[b]	115 pCi/g[b]
Uranium-234	1,627 pCi/g[c]	307 pCi/g[c]
Uranium-235	113 pCi/g[c]	24 pCi/g[c]
Uranium-238	506 pCi/g[c]	103 pCi/g[c]

a) Action levels will be calculated if necessary based on characterization data
b)Sum of ratio method assuming presence of both isotopes in picoCuries per gram (pCi/g) in a Am-241/Pu-239 activity rate of 0.18
c) Action level assuming that only a single radionuclide is present. The sum of ratio value will be calculated if applicable based upon field isotopic ratios

One spill has been documented in Building 770 that resulted in contamination up to 200,000 dpm/100 square centimeters in and around the building (DOE, 1992). Based on this information, the radionuclide PCOCs for Building 770 are plutonium and americium only. Because of the small volume of the spill, the UBC will probably be limited to soils immediately beneath the building.

Characterization of the three buildings will be performed in two phases in accordance with the IASAP. First, core samples will be taken through the concrete floor slabs to determine the presence or absence of contaminants and the approximate extent of the UBC. This will take place early during the building decommissioning process when access to the suspected UBC areas is possible. The first phase of sampling will include areas where known spills, releases or leaks occurred, and along the process waste lines. These data will be used for project planning purposes. Second, sampling will take place during remediation, which will determine the full extent of contamination and guide the remedial action including confirmation that remedial objectives have been achieved.

4.5.4 Project Approach

For Building 770, remediation of the UBC will start immediately after the concrete slab is removed by D&D. For Buildings 771 and 774, after the building strip-out is completed, the proposed accelerated action will entail excavating through the concrete slabs while the building structures are still in place. The remaining building structures will allow access to the UBC while minimizing the need for shoring and providing protection from weather conditions. The concrete slabs overlying contaminated soils will be removed during decommissioning along with contaminated building structures and appropriately dispositioned at that time. Following this, as part of the remedial action, the contaminated soil and process waste lines associated with the UBC will be excavated and dispositioned, as appropriate. During remediation, process waste lines not associated with UBC will be grouted or foamed in place to eliminate potential pathways for migration of residual contamination.

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The project will be conducted in accordance with the RFCA guidelines, and with DOE and Site ER policies and procedures. The project will also use lessons learned from previous accelerated actions.

4.5.4.1 Proposed Action Objectives

Some of the subsurface soils under the buildings are anticipated to contain concentrations of VOCs and radionuclides above Tier 1 action levels. The objective of the accelerated action is to remove VOC- and radionuclide-contaminated soils above RFCA Tier 1 action levels from the areas beneath the buildings. Soils above Tier 2 action levels will be evaluated and may be removed if it is determined that there is a potential impact to human health and/or surface water.

4.5.4.2 Proposed Action

This action will involve excavating approximately 10,000 cubic yards of soil and associated debris, including process waste lines, from under Buildings 771 and 774, and 30 cubic yards of soil from under Building 770. These estimates are based on process knowledge and documentation of historical releases. Soil removal will be performed using standard excavating equipment at the appropriate scale for working inside buildings. The contaminated soil above Tier 1 action levels will be placed into appropriate waste containers for off-Site disposal. Soil below Tier 1 action levels will be temporarily stockpiled and returned to the excavation after soil removal is completed.

4.5.4.3 Excavation

Conventional excavation techniques will be used to remove the contaminated soil and associated process waste lines. For Building 771 and 774, equipment will be chosen that can readily perform work inside the buildings. Where possible, smaller sized equipment will be chosen that does not have to be disassembled to access the building areas. If larger equipment is required, then it will be disassembled and moved to the UBC areas. Excavation equipment will consist of excavators, backhoes, and/or front-end loaders. Contaminated soils will be placed directly into the appropriate waste containers, where possible. However, temporary staging areas for the excavated soil and debris may be used, if necessary.

During remediation of Building 770 UBC, dust minimization techniques, such as water sprays, will be used to minimize suspension of particulate. In addition, earth-moving operations will not be conducted during periods of high winds. The RFETS Field Operations Procedure FO.01, Air Monitoring and Dust Control, will be incorporated into the project planning. Dust control will effectively limit the spread of contamination during the remedial action.

For remediation of Buildings 771 and 774 UBC, excavation will take place within the intact building shell. The underlying soils are expected to be moist and therefore, dust minimization requirements will be minimal. However, dust suppression will be utilized as required, and to prevent the spread of contamination.

Field instruments as described in the IASAP (in preparation) will be used to guide excavation activities. At the completion of excavation, samples and surveys will be taken along the base and sides of the excavation, to verify the completion of the remedial action. The survey and sample location and frequency will be based on the guidance provided in the IASAP If cleanup targets are not verified, further excavation and sampling will continue until either the cleanup target levels listed in Table 5, or until building integrity and worker safety issues limit continued excavation. Cleanup target levels used for the excavation activities are the RFCA Tier 1 soil action levels.

The least complex scenario for the extent of anticipated contaminated media is that the impacted soilwill be limited to the immediate underlying backfill material between the bottom of the concrete slab and the top of building foundation footings. Under this scenario, no structural foundation elements will need to be disturbed. It is anticipated that contaminants will not have migrated significantly in either a horizontal

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or vertical direction, because the building foundations are below the water table resulting in a hydraulic gradient upward into the building and associated footing drains. The flow of groundwater into the building and/or footing drains, instead of away from the building, probably limits contaminant migration to the soils immediately beneath the slab.
Should the contamination have migrated vertically beneath the strip footing of exterior walls or interior pilaster pads, options do exist to safely complete the soil removal, or to stabilize a remaining inaccessible contamination until the demolition is complete and a limited final excavation can be performed. If impacted soils are identified beneath an interior pilaster pad, soil will be removed at an angle of 45 degrees from the base of the pad until the removal adjacent to the pad is complete. New concrete pads will be placed upon the clean soil adjacent to the impacted pad. A "saddle" will be attached to the pilaster, transferring the any loading to the new pads. At this point, the affected pad will be disconnected from the pilaster, and the impacted soil beneath the pilaster will be removed.

Should contamination have migrated beneath a spread footing, it will be assessed, and dispositioned depending upon the length of footing. Impacted soil will be removed at an angle of 45 degrees from the toe of the footing until the removal adjacent to the footing is complete. Short lengths of footing (3-4 feet) can be exposed by removing impacted soil from beneath the footing without risking the structural integrity of the building. Limited underpinning will be used, if contamination extends into the soil. Finally, the impacted area will be demarcated, a liner placed to cover the concrete footing and isolate the impacted soil, and a 6-inch cap of low-slump concrete placed over the soil. This concrete cap will isolate the contamination and prevent cross-contamination during demolition. The soil will be removed after demolition is complete.

Debris encountered during the excavation will be size reduced as necessary, then appropriately dispositioned along with the soil removed with the debris.

Because Buildings 771 and 774 are constructed below the water table, dewatering of the excavation may be necessary to maintain a safe working environment. If dewatering of the excavation is necessary, a temporary sump will be installed within the excavation and used to transfer the water into a temporary storage container(s). The water will then be sampled and managed as per the Site's Incidental Water Program.

4.5.4.4 Staging of Excavated Soil

Excavated soils and debris will be immediately placed in waste containers where possible, particularly for Building 770. However, soil or debris excavated from under Buildings 771 and 774 will be staged inside the buildings and adjacent to the excavations if it cannot be immediately dispositioned. Sufficient space will be allowed between the excavation and the staging areas for equipment to maneuver, and to prevent collapse of staged materials into the excavation.

Soil with contamination levels below and above Tier 1 action levels will be placed on impermeable material to limit the spread of contamination. If the soils are wet, the area(s) will be bermed to contain water that may seep from the soils. This water will be collected and added to the water collected from the excavation for appropriate dispositioning.

Where possible, soils below Tier 1 action levels will not be removed from the excavation. At the completion of remediation efforts soils below Tier 1 and above Tier 2 action levels that are removed will be evaluated for potential return to the excavation using the criteria of protecting human health and surface water. ER, in conjunction with the Integrated Monitoring Program, will evaluate impacts to make this determination. This evaluation will be made with the Lead Regulatory Agency concurrence., Soil below Tier 2 action levels will be returned to the excavation. Soil returned to the excavation will be compacted to comply with the subsidence requirements of the ***RSOP for Recycling Concrete***. No other

backfill material will be utilized unless concrete that meets the unrestricted release criteria is returned to the excavated area during building demolition.

4.5.4.5 Completion of Remedial Action

Following verification that the remedial action is complete, Decommissioning will continue building demolition. Each building will be separately released for continued demolition as its UBC is remediated. After the environmental remediation actions are completed, the equipment used will be decontaminated, generally by pressure washing, and released. Materials incapable of being decontaminated will be disposed according to Site standard low-level waste disposal procedures.

4.5.5 Worker Health and Safety

Because of the anticipated contaminants, this project falls under the scope of the Occupational Safety and Health Administration (OSHA) construction standard for Hazardous Waste Operations and Emergency Response, 29 Code of Federal Regulations (CFR) 1926.65. Under this standard, a Site-Specific Health and Safety Plan will be developed to address the safety and health hazards of each phase of site operations and specify the requirements and procedures for employee protection. In addition, the DOE Order for Construction Project Safety and Health Management, 5480.9A, applies to this project. This order requires the preparation of activity hazard analyses (AHAs) to identify each task, the hazards associated with each task, and the cautions necessary to mitigate the hazards. These requirements will be integrated wherever appropriate.

This project could expose workers to physical, chemical, and low levels of radiological hazards. The physical hazards include those associated with excavation activities, use of heavy equipment, noise, heat stress, cold stress, and work on uneven surfaces. Physical hazards will be mitigated by appropriate use of personal protective equipment (PPE), engineering, and administrative controls. Chemical hazards will be mitigated by the use of PPE, engineering, and administrative controls. Appropriate skin and respiratory personal protective equipment will be worn throughout the project. Routine VOC monitoring will be conducted with an organic vapor monitor for any employees who must work near the contaminated soil (i.e., soil sampling or excavation personnel).

If field conditions vary from the planned approach, an AHA will be prepared for the existing circumstances and work will proceed according to the appropriate control measures. Data and controls will be continually evaluated. Field radiological screening will be conducted using radiological instruments appropriate to detect surface contamination and airborne radioactivity. As required by 10 CFR 835, Radiation Protection of Occupational Workers, applicable implementing procedures will be followed to ensure protection of the workers. Finally, dust minimization techniques will be used to minimize suspension of contaminated soils.

4.5.6 Waste Management

As stated in section 4.5.4.4, soils below Tier 2 action levels will be returned to the excavation. The soils below Tier 1 but above Tier 2 action levels will be evaluated for potential return to the excavation. Soils above Tier 1 action levels will be managed and dispositioned offsite appropriately. Any ancillary wastes generated as part of this proposed action, such as PPE, will be characterized based on process knowledge and radiological screening. Waste will be managed, recycled, treated and/or disposed of in accordance with Site policies and procedures, and in accordance with Federal, State and local laws and regulations. Waste that cannot be directly shipped offsite from the project will be appropriately managed by the Materials Stewardship Project until it can be dispositioned offsite. The specific waste containers and storage areas will be compliant with RCRA. However, the determination of the waste containers and appropriate temporary storage areas will be made after the pre-remedial characterization is complete. Insufficient information exists at this time to make the determination.

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Waste volumes were estimated based on preliminary information and process knowledge. The waste derived from Building 770 remedial action is expected to be 30 cubic yards total, with 12 cubic yards of low-level waste, 12 cubic yards of non-radioactive waste, and 6 cubic yards of low-level mixed waste. For Buildings 771 and 774 combined, the total waste volume is anticipated to be 10,000 cubic yards with 8,000 cubic yards assumed to be low level waste and 2,000 cubic yards assumed to be low-level mixed waste. These waste volumes will be refined based on the characterization results.

4.6 Pre-Demolition Survey

Before facility demolition, a pre-demolition survey (PDS) will be conducted to verify the nature and extent of radiological and chemical contamination in the facility. The survey will be conducted in accordance with DDCP. In general, the characterization process will incorporate the following steps:

- The 771 Closure Project team will develop characterization packages for taking final measurements and samples.
- DOE and the LRA will review the sampling results.
- DOE and/or the LRA will conduct an independent verification of the characterization data, if required.
- The LRA, at its discretion, may review the results from an independent verification.
- During the characterization process, the LRA will have access to the facilities to collect samples or measurements, at its discretion.

The PDS is intended to verify that the condition of the survey unit meets the requirements for demolition and disposal as provided in this DOP modification. The PDS is conducted in accordance with the requirements of the PDSP[17]. The type of data necessary to satisfy the objectives of PDS include total surface contamination measurements, removable surface contamination measurements, and scan data. Surface media sampling will only be required on a limited basis, given that suspect surface media will be removed during decommissioning.

Additional information required to design the PDS include in-process survey data and updated maps to reflect structural alterations. In-process surveys are performed to assess the changing radiological conditions during the course of decommissioning and to confirm that an area is free of gross contamination. In-process survey data will be incorporated into the PDS report.

PDS will not be repeated for Type 1 structures, if isolation controls were maintained throughout the duration of the project. Verification surveys will be performed before the release of these structures to confirm that radioactive material was not introduced into these areas. Structures such as administrative support trailers, guard stations and trailers, and auxiliary support trailers and outbuildings (acid storage, maintenance, etc.), as well as the Building 771 indirect/direct evaporative cooling are included in this category.

Non-radiological contaminants will be addressed at the RLC and in-process phases of decommissioning. In general, non-radiological contaminants will have been removed before the PDS begins, very little, if any, additional sampling will be needed. The non-radiological sampling methodology will be documented in the Pre-Demolition Survey Report. In limited cases (e.g., Building 771/Building 774 roof), non-radiological characterization may be required during the PDS phase.

Based upon available data/information, the following sampling plan is recommended in order to support the PDS effort for both radiological and non-radiological constituents.

[17] The RFETS Pre-Demolition Survey Plan is in draft form and under-going review and approval by the regulators.

- The building surfaces will be divided into survey units based on the requirements outlined in the PDSP. The types of measurements that will be performed during PDS include total surface contamination, removable surface contamination, and surface scans.
- Surface media samples may also be required on a limited basis. For this estimate, the 771 Closure Project will be delineated by the (13) decommissioning areas.

An independent verification (IV) survey may be performed on an established percentage of survey units (typically five percent) following the completion of the PDS. The independent verification contractor (IVC) will be selected and funded by the DOE and/or LRA such that independence is maintained from the 771 Closure Project personnel.

4.7 Facility Demolition

This section contains extensive information on the 771 Closure Project approach to demolition. In some instances, the sequence of activities and methods has been specified. The information contained within these sections is based on the current planning basis. The actual sequence and methods used may differ from what is indicated in this section; as long as the activity is within the scope of the ***RSOP for Facility Disposition*** and consistent with RFCA and the DPP, there will be no modification to the DOP.

The demolition phase of decommissioning includes removal of the building shell, slab, foundation and facility footing to a depth at least three feet below the final proposed grade. The demolition will be conducted in accordance with the ***RSOP for Facility Disposition***. A Colorado registered structural engineer will be utilized as indicated in the ***RSOP for Facility Disposition***.

4.7.1 Demolition Planning and Execution

In general, the demolition scope will focus on remaining structures, facilities and appurtenances associated with the 771 Closure Project, as globally defined by Dismantlement Sets and Decommissioning Areas. The scope includes such associated appurtenances as retaining walls, loading docks, pads, temporary structures, and underground utilities or structural features to the edge of the foundations. Sidewalks, fences, and aboveground exterior utilities will be removed on a case-by-base basis and coordinated with the Remediation, Industrial Decommissioning, and Site Services (RISS) Project. Asphalt roadways and the remaining underground utilities will be addressed under a separate ER decision document.

4.7.1.1 Overview

Demolition will be accomplished using a variety of mechanized equipment, primarily of the tracked variety due to the high incidence of tire failures that accompanies the use of rubber-tired equipment. Tracked excavators fitted with quick-change attachments are the preferred piece of equipment, using a variety of hydraulic shears, grapples, thumbs and vibratory demolition hammers to accomplish various demolition needs. A large tracked excavator properly outfitted can be used effectively on most two to three story tall demolition applications. Additionally, the detachable tools can be fitted with remote operated fogging water-spray nozzles for dust control purposes in order to prevent personnel with dust control spray hoses from getting into tight locations with limited escape routes. During demolition, airborne dust will be monitored on a visual presence or absence criterion, with dust control water spray being applied as required from a fire hose equipped with a fog nozzle.

Excavators can easily direct load debris into disposal containers or trucks, or front-end loaders can also be brought in depending on the debris haul distance. The following bullets provide the general sequence of activities associated with the demolition of the 771 Closure Project:

- Mobilization,
- Site preparation,

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- Removal of overhead obstructions,
- Removal of site features required to execute demolition (paved lots and streets for ease of access, retaining walls, fences, exterior fire system components),
- Demolition of outbuildings and site features closest to the Building 771 and 774 footprints,
- Demolition of remaining outbuildings and site features,
- Demolition of structures and appurtenances specific to Building 771 and 774 but independent of the main production floor space of Building 771 (e.g. Building 771 office spaces and maintenance shop) and soil removal around Building 771,
- Demolition of the main Building 774 building structure,
- Demolition of the main Building 771 building structure after using Building 771 as the containment for UBC remediation,
- Site cleanup, and
- Demobilization.

The demolition sequence is based on technical requirements. However, starting the demolition process on the smaller outbuildings will ensure that the process is refined before the more complicated structures are initiated.

4.7.1.2 Mobilization

The demolition execution will begin with the mobilization of the demolition contractor followed by site preparation. A central contractor's area will be established in an existing improved area, such as the paved area along the north side of Building 771 and Building 774. The decommissioning contractor may mobilize the following items: office trailers, shower/change facilities, lunchroom, portable toilets, hand wash units, and tool/equipment storage. A security fence will be established for access control purposes only.

4.7.1.3 Site Preparation

As part of site preparation, existing features associated with site utility systems will be located and marked. These systems will be evaluated for isolation purposes. The sanitary sewer system will need to be isolated to preventing inflow of inappropriate wastewater generated by demolition dust control activities. Electrical and communication needs within the 771 Closure Project area will be dynamic, but it is likely that power fed from the main distribution point at the south side of the Building 771 will be terminated to allow for the removal of site features in the area.

Critical power requirements will be identified as a part of the design process. Maintaining sump and foundation pumps for control of groundwater, power to sanitary sewer lift stations, and some area lighting will be necessary.

Protective barriers or fences will be erected around permanent site features designated to remain after completion of demolition and site restoration. Electrical distribution switchgear, overhead distribution lines, and area lighting to remain operational during and/or after the demolition will be protected as required and flagged for added operator awareness and overall visibility.

Run-on and run-off control features will be erected or implemented. Installation of temporary diversion berms, erosion control silt fencing, and interceptor ditches, as well as the clean out of existing drainage culverts and ditches will be accomplished as required to divert significant overland flow away from the demolition area.

Traffic patterns and specific-loading areas for waste management will be established, as will temporary stockpile areas for debris. For any backfill material that appears likely to be in temporary storage for a

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long period, a more permanent area will be created that will encompass additional erosion or run-on/run-off controls as necessary. The location of any long-term backfill stockpile area will be coordinated with ER. Finally, any known contaminated surficial soils in the areas immediately adjacent to planned demolition activities will be delineated and controlled by ER.

4.7.1.4 Removal of Site Features

Initial demolition tasks will involve stripping remnant equipment, stacks, and other materials from rooftops. The removal of overhead obstructions will reduce the possibility of equipment encountering energized electrical lines, and will allow access for operating cranes and long reach tracked excavators. The removal of remnant equipment is required early in the process in order to free up the roof system for dismantling/removal of suspected asbestos containing material in the roof membrane.

4.7.1.5 Demolition of Outbuildings

The majority of the outbuildings in the 771 Closure Project are small, light, steel-framed structures with corrugated metal siding, and were placed on cast-in-place concrete slabs. These structures will be shredded and sized on their respective concrete slabs with the tracked excavator using a detachable hydraulic shear. Metal materials will be shipped off site for recycling, with any non-recyclable items being direct loaded into containers for off site disposal. Dependant upon identification or investigation of environmental media concerns, the concrete slab/foundation associated with the building will be broken up using a vibratory hammer attachment to the excavator, with the rubble being designated as suitable for onsite backfill. The remaining outbuildings are temporary trailers, and will be dispositioned as property. Additional information obtained from in-process characterization, ER characterization, and other data obtained during the work will also be used to determine the appropriate techniques for slab removal and excavation.

Demolition activities will be initiated with the features closest to the Buildings 771 and 774 footprints to free up these areas for support and preparatory activities. For example, the remnant building shell and foundation associated with Building 715 and Building 716 will need to be removed to clear the area for the removal of soil from the buried south wall of Building 771. Removal of remnant underground storage tanks (USTs) in this area is necessary for the same reason. It is assumed that five USTs remain in the area to the south of Building 771. Two former diesel/fuel oil USTs appear to have been abandoned in place using foaming techniques. Three other USTs are suspected beneath the concrete slab of Building 716. These tanks will be removed before removing the soil from behind the south wall of Building 771.

4.7.1.6 Demolition of Structures and Appurtenances Specific to Building 771 and Building 774

The next area to address in the demolition process will be those structures and appurtenances specific to Building 771 and Building 774, but independent of the main production floor space of Building 771. The objective is to remove structures, which do not allow unrestricted access to the main building structure. These structures include, but are not limited to: Building 771A and B office spaces, T771C, Building 771C annex, West Dock, Maintenance Shop and Deluge Tank Annex; and Building 774 East Dock, hatch cover, Rooms 206-208, 212, and 250-251. Removal of these features allows access to the elevated portions of the respective buildings, as well as provides loading platforms for loading waste containers and debris hauling trucks. For Building 771, this action exposes the main structure, as defined by the three buried cast-in-place concrete walls on the south, east and west sides, and the cast-in-place concrete firewall between the office spaces on the north side of the main Building 771 footprint and the main operations area.

At the same time, the demolition contractor will be moving soil away from the east, west, and south walls of Building 771 down to an elevation approximately coincident with the second floor framing/slab. Removal of this soil will relieve passive earth loading pressure from the top one-half of the wall, and will allow for the removal of the roof framing system. The concrete walls making up the main structure of the building were not designed or constructed as retaining walls; demolition will leave as much of these

concrete walls in place, as possible. The objective of the soil removal and demolition is to leave the area in a safe configuration until the site is backfilled during site restoration. The maximum amount of wall to be left in place would correspond to a line 3 feet below the anticipated final grade of the hillside. Demolition of the eight-foot retaining wall south of the 771C Annex will be accomplished at this time to facilitate soil removal from the Building 771 east wall.

As soil is removed from the south, east and west sides of Building 771, it will be transported to a temporary stockpile area adjacent to the demolition project (assumed within one-mile round trip for estimating purposes). The anticipated configuration of the excavation behind the buried walls is a 15-foot horizontal working surface immediately behind the wall with the excavation sloping up to the nearest undisturbed grade at a slope of 1.5 feet horizontal to 1 foot vertical. Engineering calculations will be made to validate the above described scenario of exposed unsupported wall lengths based on the remaining passive soil loading, active loading from machinery operating in the vicinity of the wall, revised wind loading, and interior structural framing to remain abandoned-in-place.

4.7.1.7 Removal of the Main Building 774 Structure

The demolition approach for the Building 774 footprint will follow the same overall approach of working off of the existing first-floor slab elevation and collapsing demolition materials and debris into, and onto, this surface for segregation, sizing, and direct loading into containers and trucks positioned along the existing north side paved loading area. In addition, the Room 322 Storage Shed and Building 774, Door No. 12 concrete areas will be used to take advantage of working off of the stable grade adjacent to the exterior of these walls.

4.7.1.8 Demolition of the main Building 771 Structure

The demolition of Building 771 will be initiated with the removal of the slab, as required for ER access. After the UBC has been remediated, the remaining demolition will be completed. Once the office and loading areas have been removed to the elevation of the existing finished floor, and engineered soil removals have been accomplished to relieve passive soil loading conditions; an opening will be advanced into the main Building 771 structure from the north wall, moving south onto the finished floor slab of the first floor. The building structure will be demolished using tracked excavators, working off the first floor slab, equipped with detachable hydraulic shears and using the remnant slab of the office area as a staging area and loading areas. The concrete wall will be removed to a point a minimum of 3 feet below the proposed grade. This will be accomplished using the tracked excavator, working along the indicated projection of the final grade (minus 3 feet) using the demolition hammer to "score" the line, followed by a combination of shears and hammer to remove the loosened concrete wall above the line. This action would likely be accomplished from the exterior of the foundation wall with the concrete failed either into or out of building to be further sized and segregated from reinforcing steel as appropriate for disposition as on site clean fill.

As materials are generated from the demolition process, they will be evaluated and segregated on the basis of ultimate disposal pathway, sized according to predetermined disposition acceptance criteria, and placed into containers or transport trucks for shipping to the appropriate disposition location or destination. Empty disposal containers and haulage trucks will be staged along the north side of this loading dock, with demolition debris loaded directly for transport. Piles of segregated materials may remain staged on the dock until an appropriate amount has been generated and an appropriate container can be delivered.

The interim goal of the demolition effort will be to leave a three-sided "handball court" configuration for the Building 771 foundation area. Leaving the first two bays of structural concrete framing between the first and second floors, as well as the associated second floor slab, will provide support for the three walls of the "handball court", leaving the area safe for worker access. This will likely be the final configuration

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of the foundation for Building 771, before ER commencing final site restoration. Figure 4 provides a simplified view of what will and will not be removed during demolition.

4.7.1.9 Site Cleanup and Demobilization

The final task to be completed by the decommissioning contractor is to perform any backfill and compaction necessary to render the site safe for personnel involved in follow-on site closure actions. These backfilling operations would be limited to filling basement level openings, and providing fill material against walls to be abandoned in place to ensure they are fully stabilized. Final site backfill, re-grading, and site restoration will be conducted during the final Site remediation/restoration. The decommissioning contractor shall also be required to install final, or stabilize existing, temporary run-on/run-off controls or erosion controls. The decommissioning contractor shall then clean up the site for trash and miscellaneous debris, and demobilize.

4.7.2 Demolition of the Stack

The current demolition planning indicates that the stack structure will be demolished using explosives. The inclusion of the use of explosives on the 771 stack assumes that the stack will meet the unrestricted criteria. If it does not meet the unrestricted release criteria and cannot be decontaminated to meet the unrestricted release criteria, then a modification to the DOP or separate RFCA decision document will need to be prepared to address the decommissioning of the stack. During installation of the exhaust monitoring ports, when core samples were removed, it was observed that the concrete core would not hold its shape. It was concluded that the concrete may no longer exhibit adequate design strength. This loss of design strength could prohibit the successful demolition of the stack using mechanical methods and scaffolding. This use of explosives is essential because it avoids having to perform dangerous manual labor tasks at extreme height on a scaffolding system with questionable integrity. In accordance with the ***RSOP for Facility Disposition***, a Demolition Plan will be prepared that details how the explosives will be used to demolish the stack. A schedule will be established with the stakeholders to discuss the Demolition Plan with particular focus on the use of explosives.

Concerns about contractor experience, security and safeguards, and the consequences of a misdirected fall of the stack will be studied and addressed by choosing personnel with demonstrated experience; following the requirements of site safety and environmental programs; communication with regulators and stakeholders during planning; rehearsals; and engineering the amount and placement of explosives.

Two methods are possible under the explosives alternative: exploding a wedge out of the stack base and allowing the stack to lay over in a controlled fashion into a prepared area, and imploding the stack so that it collapses into it's base. The demolition of the stack will be developed around the layover method, allowing the stack to fall due east toward Pond 207C, into a prepared trench. As described in the *Historic American Engineering Record No. CO-83-N* (e^2M, 1997), the stack is estimated to extend 150 feet above the average adjacent grade. There is approximately 210 feet from the east side of the stack to the western edge of the Pond 207C berm, and this is adequate distance to prepare the layover area without having to breach the pond basin, and allow for an adequate margin for safety. To minimize impacts to personnel working in the local area, it is anticipated that this stack is one of the last features of the 771 Closure Project to be demolished.

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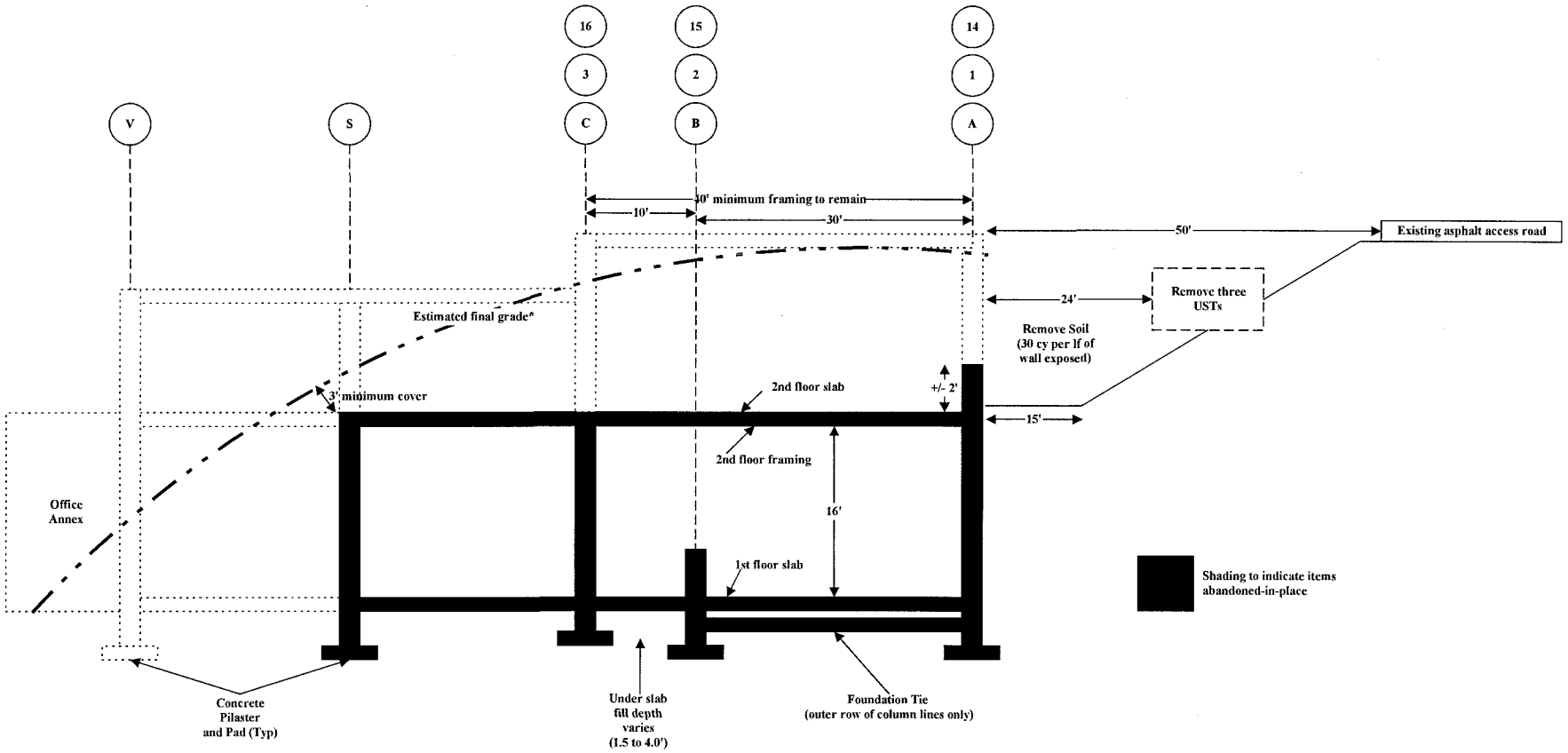
Figure 4. Building 771 Demolition Concept



*** Final grade to be specified by ER**
Not to Scale

Items to remain abandoned-in-place
1) South wall to 18' +/- above finished 1st floor slab
2) All structural components and uncontaminated 1st and 2nd floor slab from column line a to C, 1 to 3, and 14 to 16
3) East and West wall to 18' above finished 1st floor slab, and as defined by ER

The first step in site preparation for the 771 stack will be to remove the propane above ground storage tank (AST) and concrete support saddles from depression due west of the former 207C Pond. Once the tank has been removed, and on approval to excavate soil in the stack area, the Building 771 demolition subcontractor will prepare the layover area. This will involve a combined trench/soil berm feature that follows existing grade, and takes advantage of the existing depression east of the stack occupied by an AST. A typical cross section of this feature would indicate a trench excavated an estimated five feet deep and 15 feet wide, with an associated 10-foot berm on either side of the trench. Any extra soil needed to construct this feature would be obtained from soil removed to expose the subgrade portion of the stack base, augmented with soil removed to facilitate the safe demolition of subgrade features of Building 771 and Building 774 structures. Appropriate sloping of the sides of the berm will be considered in order to comply with RFETS excavation safety requirements. This berm will be constructed of loose lifts of soil material, with no formal compaction effort planned. The base of the trench will be prepared by placing two feet of uncompacted soil along the impact zone to dissipate energy. The impact zone may be lined with a cover of wetted geotextile fabric to control dust; in addition to water spray during and after detonation.

Once the explosives are placed, and additional preparatory tasks have been completed, an appropriate area of the plant will be evacuated, and the explosion will be initiated. Detonation would remove the two legs and effect a notch, with the presence of the notch combining with the stack weight to create a downward displacement. The stack structure will fall into the prepared trench. After the explosives expert has verified that no unexploded charges are present, the evacuation area will be released, and the demolition subcontractor will initiate sizing and segregation of concrete debris such that the debris can be loaded out for haulage to the PA concrete stockpiling location at the 207C Pond area. Reinforcing steel will be placed aside at the demolition site for subsequent disposition as recyclable material. A tracked excavator equipped with a vibratory hammer or hydraulic shear will demolish remaining stack base concrete down to a point a minimum of three feet below grade. Concrete debris will be removed from the portion of the stack base that will remain.

Once concrete debris has been removed from the area, the demolition subcontractor will remove the berm feature, and re-grade the site at the direction of ER. This regrading effort will only focus on leaving the site in a safe and environmentally compliant configuration. ER activities may still be required and executed in these areas. The demolition subcontractor as directed by ER will place erosion and run-on/run-off control features.

The inclusion of the use of explosives in the DOP is the first step in evaluating the use of explosives on the 771 stack. The ***RSOP for Facility Disposition*** indicates that the Site must notify the LRA and stakeholders that explosives may be used as soon as it is proposed in the planning process. The DOP accomplishes that notification and provides the initial details on why explosives are proposed as the demolition method. Additional information on the explosives and particular methodology will be developed as the characterization information is completed and planning continues. A number of options for demolition and controls are being considered and will be discussed at the D&D pizza meetings, as it is available. The process to meet the unrestricted release criteria is as follows:

- **Reconnaissance Level Characterization (RLC)** Project personnel are currently conducting the RLC for the stack. As characterization information is obtained, additional measurements and samples will be taken. The location, depth, and type of contamination found will determine the location and number of measurements and samples. If it is necessary to take measurements at higher elevations in the stack, samples could be taken using scaffolding, cranes using man-cages, and/or in-situ measurement devices.
- **Decontamination** Areas identified that exceed that unrestricted release criteria will require decontamination. The decontamination method will be consistent with those described in the RSOP for Component Removal, Size Reduction and Decontamination Activities. If the lower

areas of the stack are contaminated, standard mechanical techniques can be used (i.e. scabbling, hydrolasing, etc.). If contamination exists at higher elevations, other techniques could be used such as wall crawlers (uses scabbling, shot blast and water), structural scarifying machines, and/or the "hot spot" could be removed. Once decontamination is completed, the Pre-Demolition Survey (PDS) will be performed.

- **PDS** The extent of the PDS will be determined by the amount of contamination found. The techniques to perform the PDS will be similar to those described above in the RLC. Details on the PDS can be found in Section 4.6 of this document. Once the PDS is complete, a report will be written, which will include this data. DOE and the LRA will review and approve the data to ensure the stack meets the unrestricted release criteria.

4.7.3 Demolition of the Tunnels

The exhaust tunnel connecting Building 771 and the stack will be abandoned in place by filling the interior void space with flowable backfill - soil/Portland cement mix suitable of achieving compressive strength of approximately 50 psi (historically used at the RFETS to backfill underground electrical duct bank installations). This will be performed as a decommissioning task in order to guarantee that interrelated tasks associated with the removal of Building 771 structure or the exhaust stack are not impeded or delayed. The soil under and around the tunnels will be characterized in accordance with the IASAP or an ER sampling and analysis plan, and the characterization will be integrated into the schedule for decommissioning the facility. If remediation is required, it will be conducted before dispositioning the tunnels and demolishing and backfilling the building.

Once the tunnel has been decontaminated to unrestricted release criteria, a cast-in-place concrete bulkhead will be placed at either end of the tunnel. Alternatively, the end of the tunnel that discharges into the base of the stack could be left open allowing the flowable backfill to fill the abandoned stack base. With either end of the tunnel effectively plugged, the demolition subcontractor would expose the concrete roof of the tunnel by removing overlying soil at twenty-five foot interval along the 100-foot length (3 locations). A hole would be punched through the concrete roof at the exposed location. Flowable fill material would then be pumped/placed through the hole, alternating placement locations to keep a uniform lift of material filling the tunnel void. Once the tunnel is full, the soil removed to expose the tunnel roof will be replaced by the demolition subcontractor, and compacted to a density appropriate for the future use of the area or as defined by ER.

The tunnels between Building 771 and Building 776 and Building 771 and Building 774 will be abandoned using the same method described above. After a tunnel has been decontaminated and verification has been made that the soils around a tunnel are below the action levels, a tunnel will be filled with flowable fill. A further verification will be made that none of the tunnel is within three feet of the final proposed grade. If any part of a tunnel is within three feet of the final proposed grade, that portion of the tunnel will be removed before placing the flowable fill.

If the tunnel(s) will negatively impact groundwater, or depth to the top of the tunnel(s) changes due to final contours, backfill, and/or covers, or contamination requiring remediation is found below the tunnel(s); then the tunnel(s) will be removed. If the Sitewide Groundwater Balance Study, Land Configuration Basis Design, and/or ER characterization results change the tunnel disposition from that indicated in the DOP; then the consultative process will be used to determine the appropriate disposition method.

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5 WASTE MANAGEMENT

Various waste types will be generated as a result of decommissioning and ER activities within the 771 Closure Project. Waste estimates for these and other RFETS Closure Project activities are reported in the "Waste Generation, Inventory, and Shipping Forecast," which includes projections for waste volumes to be generated, stored and shipped from the Site in each fiscal year. As the Project progresses, waste volume estimates will be refined and updated on a quarterly basis, or more frequently if warranted by significant changes. This section of the DOP describes how the various wastes will be managed for facility decommissioning. Waste disposition associated with the under-building remediation contamination is addressed in Section 4.5.6.

5.1 Waste Types

A variety of regulated wastes and recyclable materials are currently managed and stored in Building 771, and additional waste will be generated during decommissioning. Table 6 provides an estimate of the types and volumes of remediation waste and recyclable materials that will be generated during decommissioning. The remainder of the section provides a brief description of each potential waste type for under building contamination remediation activities. The waste types for component removal, size reduction and decontamination activities are addressed in the ***RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities***. The waste types for demolition activities are addressed in the ***RSOP for Facility Disposition***.

5.1.1 Radioactive Waste

Radioactive wastes are generated at RFETS facilities during operations in areas where radioactive materials are or were formerly managed. LLW is defined as any radioactive waste that is not classified as TRU waste, high level waste, or spent nuclear fuel. The concentration of alpha-emitting radionuclides in LLW is less than 100 nanocurie/gram (nCi/g), with no specified minimum level of activity. LLW forms expected from under building contamination remediation are soils. LLW is routinely shipped to the Nevada Test Site (NTS) for disposal.

5.1.2 Mixed Waste

Mixed wastes contain both radioactive and hazardous components. These wastes will be managed in accordance with both appropriate radioactive waste requirements and appropriate hazardous waste requirements. Low level mixed (LLMW) remediation wastes that do not have a current treatment or disposal path will be managed under the Site Treatment Plan (STP). These wastes may include oils, bypass and legacy sludges and wet slurries, and waste chemicals, including acids and organic solutions.

LLMW is LLW with a hazardous waste constituent or characteristic. LLMW types expected are the same as described above in Section 5.1.1 for LLW. Solid LLMW is planned for disposal at Envirocare or another treatment, storage, and disposal facility (TSD). LLMW water may be transferred to Building 374 or other on-Site treatment unit, as described in Section 5.1.3.

Table 6. Waste/Recyclable Material Estimates for the 771 Closure Project

Category*	Sub-Category	Volume	Proposed Destination
Rad-Regulated			
Transuranic (TRU)	TRU	1,860 m^3	Waste Isolation Pilot Plan (WIPP)
	TRU Mixed (TRM)	350 m^3	WIPP
	TRU/TRM Liquids	0.01 m^3	N/A
Low-Level (LLW)	LLW – Including Asbestos	4,110 m^3	NTS, Envirocare
	LLW – Structural Debris	2,790 m^3	NTS, Envirocare, GTS Duratek
	LLW – Surface Contaminated Objects (SCO)	10,600 m^3	NTS, Envirocare, GTS Duratek
	LLW – PCBs	1.8 m^3	Approved TSD
Low-Level Mixed (LLMW)	LLMW - RCRA solids	2.0 m^3	Approved TSD
	LLMW - RCRA liquids	2.9 m^3	Approved TSD**
Non-Rad Regulated			
Hazardous/Toxic	RCRA Solids	6 m^3	Approved TSD
	PCBs	1 m^3	Approved TSD
Sanitary	Non-Routine Sanitary	2,200 tons	Sanitary Landfill
	Friable Asbestos	880 tons	Approved TSD
	Non-Friable Asbestos	900 tons	Sanitary Landfill
Material for Recycle	Rubble/Structural Construction Debris	8,100 tons	Recycled On Site

* Waste volume estimates include demolished structures.
** Assumed to include on-Site treatment facilities (e.g., RCRA Unit 374.3).

5.1.3 Wastewater

Consistent with provisions of the RFCA Implementation Guidance Document (IGD)[18], wastewater generated during decommissioning will be collected and characterized to determine the appropriate management option (e.g., on-Site treatment, storage pending off-Site treatment and/or disposal). During this time, either of two process waste tanks in Building 731[19] and/or the tank in Building 732[20] may be used as a flow-through device for RCRA regulated liquids and non-RCRA regulated liquids collected for transfer to Building 374 for treatment. Neither the tanks nor secondary containment will be modified or repaired to meet current tank system standards. Before use, appropriate tank management requirements (e.g. inspections, leak detection) will be identified in consultation with the LRA and implemented.

[18] Rocky Flats Cleanup Agreement (RFCA), Appendix 3, RFCA Implementation Guidance Document (latest version).

[19] Former RCRA 90-day tanks #731-651 and 731-652.

[20] Interim Status Unit 40.16.

5.2 Management Requirements for Remediation Waste

Hazardous and mixed wastes designated as "remediation" waste will be managed in accordance with the ARARs presented in Section 7 of this DOP, the referenced RSOPs, and with the remediation waste management requirements described in Building 771 Operations Order OO-771-231, which may be modified as appropriate. Hazardous and mixed waste not designated as remediation waste will be managed in accordance with the Colorado Hazardous Waste Act.

5.2.1 Remediation Treatment Units

5.2.1.1 Lead-lined drum crushing

Drum crushing activities will be conducted in Building 771. The unit, expected to operate through 2002, will crush both radioactively contaminated and non-contaminated drums. Approximately 70-100 radioactively contaminated drums may be lead-lined. Drum crushing activities will be conducted in accordance with procedure PRO-608-D&D-011, Size Reduction in Building 771/774. Per this procedure, lead-lined drums must be free of liquids prior to crushing. Drum crushing activities are not planned for beryllium contaminated drums. In the event crushing of lead-lined beryllium contaminated drums is necessary, the Job Hazards Analysis (JHA) and procedure will be revised accordingly. Crushed lead-lined drums will be managed as LLM or TRM remediation waste. The drum crusher is a self-contained unit designed to mitigate airborne releases. Lead trained workers will be utilizing the appropriate personal protective equipment/clothing as dictated by the JHA. A unit specific information sheet is posted on the entrance of the area containing the unit. The unit will be inspected daily during lead-lined drum crushing operations and weekly when remediation waste is located in the area in accordance with Operation Order 00-771-231.

5.3 Management Requirements for Compliance Order Wastes

The Site's inventories of waste chemicals, idle equipment containing hazardous materials, and mixed residues contained in tank systems are governed by the terms and conditions of compliance orders on consent.

5.3.1 Idle Equipment

Idle equipment containing hazardous materials is managed under the Idle Equipment and Hazardous Waste Tank Compliance Order on Consent.[21] Table 7 contains a list of the currently identified idle equipment in Building 771. Some of this equipment may be dispositioned during deactivation and additional pieces of equipment may be identified during deactivation and decommissioning. An up-to-date list will be maintained in the 771 Closure Project Files. Idle equipment containing hazardous materials, both existing and newly identified, will be managed as follows:

- Idle equipment containing hazardous materials will be posted with a sign or tag stating the following: *"This idle equipment contains material that, if released, could affect worker safety or the environment. Report any spillage to supervision immediately."*
- Idle equipment will be subject to the following inspection schedule:
  - Hazard Category 1: Monthly
  - Hazard Category 2: Bi-monthly
  - Hazard Category 3 & 4: No inspections required

[21] Idle Equipment and Hazardous Waste Tanks Compliance Order on Consent (97-08-21-01), including the RFETS Idle Equipment Management Plan, 01/28/00.

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Table 7. 771 Closure Project Idle Equipment with Hazardous Materials Inventory

Location	Idle Equipment Number	SET/ AREA #	Description	Hazard Category	Material	Rad-Contaminated	Status[22]
771 – Room 246A	771-0021	73	Hydrofluoric Acid Evaporator	3	Hydrofluoric Acid	No	Operationally Empty
771 – Room 146	771-0062	36	Vacuum Receiving Tank	2	Nitric Acid	No	Operationally Empty
771 – Room 174	771-0063	68	Fume Scrubber Sight Glass	2	KOH	No	2 kg of KOH residue
774 – Room 102, Tank 11R	774-0001	93	Sand Filter Tank (500 gallon)	3	Sand filters/silver chrome	Yes	Operationally Empty
774 – Room 102, Tank 11L	774-0002	93	Sand Filter Tank (500 gallon)	3	Sand filters/silver chrome	Yes	Operationally Empty
774 – Room 103	774-0003	93	Caustic Storage Tank	3	KOH	Yes	Operationally Empty
774 – Outside	774-0007	AM	Caustic Storage Tank	3	KOH	No	Operationally Empty

[22] Status indicates the status of the equipment at the time of the DOP approval.

- Inspections will be conducted by waste inspectors, who will ensure the equipment is posted, in good condition, and not leaking. Inspectors will document their inspections in an inspection log, noting any required corrective action(s).
- Hazardous waste contained in idle equipment will be drained or removed to the point of being empty. For surfaces of the equipment that are visible and readily accessible, the affected surfaces (i.e., surfaces that may have come into contact with hazardous waste) will be cleaned or wiped visually clean (i.e., no oily surface or sheen) to satisfy the CHWA definition of a "clean debris surface."[23] In the event the clean debris surface standard cannot be met, the equipment will be cleaned or wiped down to remove as much removable contamination as reasonably possible, with the objective of eliminating significant risk from the remaining residuals.
- The hazardous waste will be characterized in accordance with 6 CCR 1007-3, Part 262.11. Sampling methods, if used, will comply with those listed in Appendix I of 6 CCR 1007-3, Part 261. Analytical test methods, if used, will comply with those instructions contained in either EPA Manual SW-846 or RFETS "L-Procedures."
- When empty, the equipment will be characterized and managed in accordance with the applicable ARARs.

5.3.2 Mixed Residues

Residues are plutonium-contaminated liquids and solids that were once held in reserve at RFETS because they contain plutonium in sufficient quantities to warrant treatment for recovery of nuclear material. Tanks previously storing mixed residues located within the 771 Closure Project are listed in Table 8.

The existing inventory of liquid mixed residues contained in tanks and ancillary equipment has been managed under the terms and conditions of the Mixed Residue Compliance Order on Consent.[24] As part of facility deactivation, tap and drain activities were completed on these tanks in March 2001. All mixed residue tanks in the 771 Closure Project are physically empty and are inspected quarterly. In the event additional inventory is discovered in a tank during decommissioning, Facility Management will develop an action plan to determine the source of the liquid, or schedule a sampling event or other appropriate action to make a hazardous waste determination. If appropriate, the action plan may include draining the liquid from the system. The 771 Closure Project Health and Safety Plan (HASP) contains pre-planning requirements for responses to possible releases from mixed residue tank systems. Pre-planning activities include identification of vital elements of the tank system, identification of locations of primary shut-off valves capable of isolating feed to a tank, and a pre-release plan, which specifies the recommended method to drain the tank system (e.g., hot tapping at a low spot, draining into bottles, or draining into another tank system). Facility operations personnel are trained to implement the pre-release plan and accompanying shut-off procedures. In the event of a release from a mixed residue tank system, the Site's RCRA Contingency Plan will be followed, as appropriate.

Given all mixed residue tanks in Building 771 are physically empty (e.g., each tank system has been "tapped and drained") and subsequent closure activities are included in approved Closure Description Document and the 771 Closure Project DOP, all requirements of the Order have been satisfied. In accordance with paragraph 66, the Mixed Residue Compliance Order on Consent has been terminated in Building 771.

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[23] In accordance with 6 CCR 1007-3, Part 268.45, a "clean debris surface" is defined as "a surface that, when viewed without magnification, shall be free of all visible contaminated soil or hazardous waste except that residual staining from soil and waste consisting of light shadows, slight streaks, or minor discoloration, and soil and waste in cracks, crevices, and pits may be present provided that such staining and soil and waste in cracks, crevices, and pits is limited to no more than 5% of each square inch of surface area."

[24] Mixed Residue Compliance Order on Consent (99-09-24-01), including the Mixed Residue Tank Plan.

Table 8. 771 Closure Project Mixed Residue Units

Tank #	Tank Type	Room #	Unit #	System #	SET #	Physical Status
500	P	114	93.001	6	61	PE
501	P	114	93.002	6	61	PE
502	P	114	93.003	6	61	PE
503	P	114	93.004	6	61	PE
504	P	114	93.005	6	61	PE
505	P	114	93.006	6	61	PE
506	P	114	93.007	6	61	PE
507 old	P	114	93.008	6	61	PE
507 new	P	114	none	6	61	PE
508 old	P	114	93.009	6	61	PE
508 new	P	114	none	6	61	PE
509 old	P	114	93.010	6	61	PE
509 new	P	114	none	6	61	PE
510 old	P	114	93.011	6	61	PE
510 new	P	114	none	6	61	PE
529	P	114	93.012	6	61	PE
530	P	114	93.013	6	61	PE
544	A	114	93.014	15	61	PE
545	A	114	93.015	15	61	PE
546	A	114	93.016	6	61	PE
547	A	114	93.017	6	61	PE
548	A	114	93.018	7	7	PE
549	A	114	93.019	7	7	PE
550	A	114	93.020	7	7	PE
551	A	114	93.021	16	61	PE
552	A	114	93.022	16	61	PE
553	A	114	93.023	6	61	PE
554	A	114	93.024	6	61	PE
609	P	114	none	16	61	PE
610	P	114	none	16	61	PE
705	RR	114	93.025	23	60	PE
706	RR	114	93.026	23	60	PE
713	RR	114	93.027	29	60	PE
714	RR	114	93.028	23	60	PE
715	RR	114	none	29	60	PE
716	RR	114	none	29	60	PE
764	RR	114	none	12	60	PE
765	RR	114	none	12	60	PE
949	A	114	93.029	6	61	PE
950	A	114	93.152	6	61	PE
951	A	114	93.030	6	61	PE
952	A	114	93.031	6	61	PE
953	A	114	93.032	6	61	PE
954	A	114	93.033	6	61	PE
955	A	114	93.034	6	61	PE
1001	P	146	93.035	9	36	PE
1002	P	146	93.036	9	36	PE
1003	P	146	93.037	9	36	PE

Table 8. 771 Closure Project Mixed Residue Units

Tank #	Tank Type	Room #	Unit #	System #	SET #	Physical Status
1004	P	146	93.038	9	36	PE
1005	P	146	93.039	9	36	PE
1006	P	146	93.040	9	36	PE
1007	RR	146	93.041	9	36	PE
1008	RR	146	93.042	9	36	PE
1009	P	146	93.043	9	36	PE
1010	P	146	93.044	9	36	PE
1011	P	146	93.045	9	36	PE
1012	P	146	93.046	9	36	PE
1013	RR	146	93.047	9	36	PE
1014	RR	146	93.050	9	36	PE
1019	P	146	none	9	36	PE
1020	P	146	none	9	36	PE
1022	RR	146	93.048	9	36	PE
1023	RR	146	none	9	36	PE
1024	RR	146	none	9	36	PE
1032	P	146	93.049	9	36	PE
1062	P	146	none	9	36	PE
1063	P	146	none	9	36	PE
1064	P	146	none	9	36	PE
1065	P	146	93.051	9	36	PE
1066	P	146	93.052	9	36	PE
177	RR	149	none	24	22	PE
208	RR	149	93.089	33	27	PE
360	RR	149	93.090	33	66	PE
361	RR	149	93.091	33	66	PE
362	RR	149	93.092	33	66	PE
363	RR	149	99.093	33	66	PE
364	A	149	93.094	33	66	PE
451	RR	149	93.095	11	66	PE
452	RR	149	93.096	11	66	PE
453	RR	149	93.097	11	66	PE
454	RR	149	93.098	11	66	PE
466	RR	149	93.099	11	66	PE
467	RR	149	93.100	11	66	PE
468	RR	149	93.101	11	66	PE
469	RR	149	93.102	11	66	PE
470	RR	149	93.103	11	66	PE
472	RR	149	93.104	11	66	PE
630	P	149	none	24	22	PE
631	P	149	none	24	22	PE
921	RR	149	93.105	24	66	PE
922	RR	149	93.106	24	66	PE
923	RR	149	93.107	24	66	PE
927	RR	149	93.108	24	66	PE
928	P	149	93.109	26	66	PE
931	A	149	93.110	11	66	PE
932	A	149	93.111	11	66	PE

Table 8. 771 Closure Project Mixed Residue Units

Tank #	Tank Type	Room #	Unit #	System #	SET #	Physical Status
933	A	149	93.112	11	66	PE
934	A	149	93.113	11	66	PE
971	RR	149	93.114	11	66	PE
972	RR	149	93.115	11	66	PE
973	RR	149	93.116	11	66	PE
974	RR	149	93.117	11	66	PE
975	RR	149	93.118	11	66	PE
976	RR	149	93.119	11	66	PE
980	RR	149	93.120	26	66	PE
D3	P	153	none	18	67	PE
D4	P	153	none	18	67	PE
D86	RR	153	none	18	67	PE
D87	RR	153	none	18	67	PE
D88	RR	153	none	18	67	PE
1081	RR	174	93.121	10	68	PE
1082	RR	174	93.122	10	68	PE
1083	RR	174	93.123	10	68	PE
1084	RR	174	none	10	68	PE
1087	P	174	93.124	10	68	PE
1088	P	174	93.125	10	68	PE
1803	P	180A	93.126	17	43	PE
1804	P	180A	93.127	17	43	PE
1805	P	180A	93.128	17	43	PE
1809	A	180A	93.129	17	43	PE
1810	A	180A	93.130	17	43	PE
1811	A	180A	93.131	17	43	PE
1813	P	180A	93.132	17	43	PE
1816	P	180A	93.133	17	43	PE
1817	P	180A	93.134	17	43	PE
80	RR	180K	93.149	17	69	PE
81	RR	180K	93.150	17	69	PE
82	RR	180K	93.151	17	69	PE
83	RR	180K	93.137	17	69	PE
84	RR	180K	93.138	17	69	PE
85	RR	180K	93.139	17	69	PE

P – Pencil tank A – Annular tank RR – Raschig ring tank PE – Physically empty[25]

5.4 Waste Disposal

Wastes generated as a result of facility decommissioning activities will be remediation waste and packaged and characterized in compliance with RFETS waste management procedures, which implement

[25] "Physically Empty" is the "RCRA stable" counterpart for mixed residue tanks. "Physically Empty" means a tank or ancillary equipment has no liquid remaining after verification from personnel who are familiar with the tank system or by a proven technology (e.g., by draining at low points or by non-destructive testing). See Section 2, Mixed Residue Tank Plan

disposal site WAC and U.S. Department of Transportation (DOT) packaging requirements. Disposal locations will be selected by the contractor based on the properties of the particular waste stream.

5.5 Waste Minimization and Recycling

Waste minimization and recycling will be integrated into the planning and management of the remediation waste generated during decommissioning. Unnecessary waste generation will be controlled using work techniques that prevent the contamination of areas and equipment; preventing unnecessary packaging, tools, and equipment from entering radiological contaminated areas; and reusing contaminated tools and equipment when practical.

Standard decontamination operations and processes will be evaluated for waste minimization potential and suitable minimization techniques will be implemented. Property with radiological contamination or property containing hazardous materials may be reused or recycled on Site, off Site by other DOE facilities, or by publicly or privately owned facilities having proper authorization to take possession of the property.

Recycling options that may be considered for materials generated during decommissioning are listed in Table 9. Materials will be recycled based on availability of appropriate recycle technologies, availability of approved facilities, and cost effectiveness.

Table 9. Material Recycling Options

Material	Recycle Option	Comments
"Clean" scrap metal (not radioactively contaminated and not considered hazardous in accordance with RCRA)	Recycle through approved scrap metal vendors via contract.	Material must meet receiving facility's WAC and license requirements, if any.
Radioactively contaminated scrap metal	Recycle by means of metal melt process vendors.	Material must meet the receiving facility's WAC and license requirements, if any.
Radioactive mixed scrap material (i.e., radioactively contaminated scrap metal mixed with hazardous constituents)	261.6, recycle exemption	Currently trying to locate and approve facilities that can manage this type of material.
Non-radioactive scrap metal contaminated with beryllium	Decontaminate and recycle through approved commercial facility.	Decontamination must meet the release criteria prescribed by 10 CFR 850.
Clean building rubble	Reuse on Site as backfill.	Must meet release criteria established in the ***RSOP for Recycling Concrete***.
Clean wiring and other electrical components.	Recycle through approved commercial recycling facility.	Material must meet the receiving facility's WAC and license.
Clean bulk plastics and glass	Recycle through approved commercial recycling facility.	Material must meet the receiving facility's WAC and license.
Used lead acid batteries	Recycle through approved commercial recycling facility.	Material must meet receiving facility's WAC and license requirements, if any.
Used oil	Recycle through approved commercial fuel blending facility.	Material must meet receiving facility's WAC and license requirements, if any.

An estimated 8,000 m^3 of structural rubble (i.e., concrete) and 97 m^3 of structural steel will be generated during decommissioning. Concrete that meets the unrestricted-release criteria prescribed by the ***RSOP for Recycling Concrete*** will be recycled as fill material to contour the land when decommissioning activities are completed. Concrete not meeting the unrestricted-release criteria will be disposed of at an appropriate disposal facility.

The recycled concrete will not be transported and stockpiled as indicated in the ***RSOP for Recycling Concrete***. Instead, it will be verified that there is minimal reinforcing steel in the debris and the debris will be placed into depressions as backfill material. This approach will be predicated on verification of

the soils meeting the action levels. The debris will generally have two flat surfaces, and will not exceed twelve inches in thickness. These characteristics would lend the material to be used as backfill in a layered approach that will meet the ***RSOP for Recycling Concrete*** requirements for ultimate subsidence for backfilled areas of less than one percent. Layering the backfill would mean that a uniform layer of concrete debris would be placed in a thickness not to exceed two feet. Then a layer of soil would be placed on top of the concrete, followed by a formal compaction effort to facilitate moving the concrete debris into a stable configuration, as well as forcing soil into void spaces between adjacent pieces of concrete. This layering would then continue to a point 3 feet below the anticipated final grade, with the final 3-foot lift of backfill being entirely soil.

Implementing this approach could significantly decrease cost by eliminating the steps involved with loading and transporting debris to the PA stockpiling area, size reduction at that location, and loading and transportation back to a fill site.

This approach will be verified through an engineering analysis. If the assessment indicates that the proposed method will not meet the 1% subsidence requirement, then the material will be removed and dispositioned in accordance with the requirements of the **RSOP for Recycling Concrete**.

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6 CLOSURE OF RCRA-REGULATED UNITS

The information contained in this section supercedes the RCRA closure requirements in the RCRA permit and Interim Status Closure Plan. Approval of this DOP modification serves as the RCRA permit modification. RCRA-regulated units located within the 771 Closure Project are listed in Table 10, associated unit-specific closure information is provided in Appendix A, and schematics defining the boundaries of each tank system and treatment unit within Building 774 are included in Appendix B. These units will be closed in accordance with the closure performance standards described in this section. Closure performance standards are presented in this section for the eleven container storage units (Buildings 771 and 774), 2 gloveboxes (Building 774 only), 148 tanks (Buildings 771 and 774) and 3 treatment units (Building 774). Closure information for the incinerator located in Building 771 will be submitted in a separate closure description document (CDD) or as a minor modification to the DOP. RCRA-regulated units will be closed before building demolition.

6.1 Closure Options

Closure may be conducted in two stages: first by rendering a unit or portion of a unit "RCRA stable"[26] (if it is a permitted or interim status unit) or "physically empty" (if it is a mixed residue unit), then by completing the activities associated with the closure options described below.

6.1.1 Clean Closure

RCRA-regulated units may be "clean closed" by documenting the absence of contamination or by decontaminating the unit.

6.1.1.1 Historical Knowledge Confirmation

For units having a complete, detailed operating history, clean closure will be demonstrated when the following criteria are met:

- A review of the RCRA Operating Record indicates hazardous or mixed waste was never spilled in the unit, or complete documentation exists to demonstrate releases were adequately cleaned up (i.e., if a spill did occur, visible residual liquids and solid wastes were removed and the spill area was decontaminated). This justification requires LRA concurrence.
- A visual inspection of the unit and associated ancillary equipment notes the absence of hazardous or mixed waste stains and/or residuals.

[26] "RCRA Stable" is the first step toward closure of permitted or interim status units, whereby wastes are removed from the unit and the possibility of future waste input is eliminated. For tank systems, this means a tank and its ancillary equipment have been drained to the maximum extent possible using readily available means, with the objective of achieving less than one percent by volume holdup, no significant sludge remaining and no significant risk associated with the remaining residuals. Physical means, such as lock out/tag out or blank flanges, must then be used to ensure no waste is introduced to the system is defined in Part X.E of the RFETS RCRA Part B Permit and Closure Plan for Interim Status Units.

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Table 10. RCRA-Regulated Units in the 771/774 Closure Project

Unit #	Room #	SET/ AREA #	Regulatory Status[27]	EPA Waste Codes (from WEMS)
771.1	172	AE	Permitted	See RFETS RCRA Permit
771.1	181A	AF	Permitted	See RFETS RCRA Permit
771.1	182	AE	Permitted	See RFETS RCRA Permit
771.1	183	AE	Permitted	See RFETS RCRA Permit
771.1	184	AE	Permitted	See RFETS RCRA Permit
771.1	186	AE	Permitted	See RFETS RCRA Permit
771.1	188	AE	Permitted	See RFETS RCRA Permit
771.1	Annex	AB	Permitted	See RFETS RCRA Permit
774.1	241	AF	Permitted	See RFETS RCRA Permit
774.1	210 Microwave GB	92	Permitted	See RFETS RCRA Permit
774.1	103 GB 355	93	Permitted	See RFETS RCRA Permit

Tank #	Unit #	SET/ AREA #	Regulatory Status[28]	EPA Waste Codes (from WEMS)
774	55 Series		Interim Status	D001, D002, D004-D011, D018, D019, D028, D029, D035, D038, D040, D043, F001-F003, F005, F007-F009
T-1A	55.01	91	Interim Status	D001, D002, D004-D011, D018, D019, D028, D029, D035, D038, D040, D043, F001-F003, F005, F007-F009
T-1RF	55.02	91	Interim Status	D001, D002, D004-D011, D018, D019, D028, D029, D035, D038, D040, D043, F001-F003, F005, F007-F009

[27] Regulatory status indicates the status of the unit at the time of the DOP approval

[28] Regulatory status indicates the status of the unit at the time of the DOP approval

Tank #	Unit #	SET/ AREA #	Regulatory Status[28]	EPA Waste Codes (from WEMS)
T-4L	55.03	91	Interim Status	D001, D002, D004-D011, D018, D019, D028, D029, D035, D038, D040, D043, F001-F003, F005, F007-F009
T-10	55.04	93	Interim Status	D001, D002, D004-D011, D018, D019, D028, D029, D035, D038, D040, D043, F001-F003, F005, F007-F009
T-4R	55.05	91	Interim Status	D001, D002, D004-D011, D018, D019, D028, D029, D035, D038, D040, D043, F001-F003, F005, F007-F009
T-70	55.07	91	Interim Status	D001, D002, D004-D011, D018, D019, D028, D029, D035, D038, D040, D043, F001-F003, F005, F007-F009
T-5 (F-5)	55.08	93	Interim Status	D001, D002, D004-D011, D018, D019, D028, D029, D035, D038, D040, D043, F001-F003, F005, F007-F009
C-1	55.09	93	Interim Status	D001, D002, D004-D011, D018, D019, D028, D029, D035, D038, D040, D043, F001-F003, F005, F007-F009
T-9	55.10	93	Interim Status	D001, D002, D004-D011, D018, D019, D028, D029, D035, D038, D040, D043, F001-F003, F005, F007-F009
T-2F	55.11	91	Interim Status	D001, D002, D004-D011, D018, D019, D028, D029, D035, D038, D040, D043, F001-F003, F005, F007-F009
T-40 (old)	55.13		Interim Status	D001, D002, D004-D011, D018, D019, D028, D029, D035, D038, D040, D043, F001-F003, F005, F007-F009
Filter B	55.22	91	Interim Status	D001, D002, D004-D011, D018, D019, D028, D029, D035, D038, D040, D043, F001-F003, F005, F007-F009
T-73B	55.23	91	Interim Status	D001, D002, D004-D011, D018, D019, D028, D029, D035, D038, D040, D043, F001-F003, F005, F007-F009
T-210A	55.24	93	Interim Status	D001, D002, D004-D011, D018, D019, D028, D029, D035, D038, D040, D043, F001-F003, F005, F007-F009
T-71	55.25	91	Interim Status	D001, D002, D004-D011, D018, D019, D028, D029, D035, D038, D040, D043, F001-F003, F005, F007-F009
774	56 Series		Interim Status	D001, D006, D007, D008, D018, D019, D028, D029, D035, D038, D040, D043, F001-F003, F005
T-1	56.01	92	Interim Status	D001, D006, D007, D008, D018, D019, D028, D029, D035, D038, D040, D043, F001-F003, F005
T-2	56.02	92	Interim Status	D001, D006, D007, D008, D018, D019, D028, D029, D035, D038, D040, D043, F001-F003, F005
T374A	56.07	92	Interim Status	D001, D006, D007, D008, D018, D019, D028, D029, D035, D038, D040, D043, F001-F003, F005

Tank #	Unit #	SET/ AREA #	Regulatory Status[28]	EPA Waste Codes (from WEMS)
T-102	774.2	94	Permitted	D002, D004-D010, D018, D019, D022, D028, D029, D035, D038, D040, D043, F001-F003, F005, F009
T-103	774.2	94	Permitted	D002, D004-D010, D018, D019, D022, D028, D029, D035, D038, D040, D043, F001-F003, F005, F009
774.3A T-7, T-8, T-12, GB4	210	92	Permitted	D001, D002, D004-D011, D018, D019, D028, D029, D035, D038, D040, D043, F001-F003, F005, F007-F009
774.3B T-201, T-202, T-203, T-204, T-40 (new)	241, 103	95, 93	Permitted	D001, D002, D004-D011, D018, D019, D028, D029, D035, D038, D040, D043, F001-F003, F005, F007-F009
774.3C GB40, T-13, T-14	210, 210A	92	Permitted	D001, D006, D007, D008, D018, D019, D028, D029, D035, D038, D040, D043, F001-F003, F005

6.1.1.2 Decontamination

Units to be "clean closed" by decontamination will typically be washed and rinsed, scabbled, or hydroblasted in accordance with the methods and controls specified in the ***RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities***.

For units to be washed, a suitable decontamination solution will be used to remove visible waste residuals and contaminants. Following decontamination, the unit will be rinsed with clean water. The final rinsate will be tested to determine whether:

- The pH of the rinsate is between 6 and 9; and
- The concentrations of priority pollutants (identified as having been managed in the unit) and heavy metals are below the Tier II action levels for groundwater, as defined in Attachment 5 of RFCA. Rinsate meeting the Tier II groundwater action levels for listed waste constituents associated with the unit and the LDR standards for characteristic waste will be deemed to be "no longer contained in" and will be managed as non-hazardous waste.

The final rinsate will not exceed a volume of two gallons per 100 ft^2 of surface area rinsed, and for internal surfaces, such as tank systems, the final rinsate will not exceed a volume of 5% of the capacity of the system. If test results indicate the standard has been met, the unit will be considered "clean closed." Units that cannot be decontaminated to meet the performance standard will be removed before building demolition and managed as hazardous or mixed waste.

Scabbling or hydroblasting may be utilized to decontaminate contaminated surfaces. Following decontamination, surfaces must meet the following criteria:

- A visual inspection of the unit and associated ancillary equipment confirms the absence of hazardous or mixed waste stains and/or residuals; and
- Radiological surveys verify surfaces are at or below the unrestricted release criteria identified in the ***RSOP for Facility Disposition***.

Other more aggressive decontamination techniques may be utilized as necessary. Other techniques include grit blasting, high-pressure steam cleaning, scarifying, grinding and "shot" blasting.

Areas that do not meet the visual inspection criteria will be removed as hazardous or mixed debris. Areas that do not meet the unrestricted release criteria will be disposed of as non-hazardous radioactive waste.

6.1.2 Unit Removal in Conjunction with "Debris Rule" Treatment

Alternatively, RCRA-regulated units may be closed by removal and treated in accordance with the "debris rule." The debris rule applies to unit equipment or structures that have no intended use or reuse, and are slated for removal and discard. To meet the "debris rule" standard, decontamination or use of alternative treatment options will be conducted using the "abrasive blasting" physical extraction technology, or other appropriate technology identified in Part 268.45 of 6 CCR 1007-3 (Table 1, Alternative Treatment Standards for Hazardous Debris). Application of a "debris rule" technology may occur before unit removal provided the tank has no future use. If, after treatment, the equipment or structure meets the standard for a clean debris surface, it will be managed as a solid waste. In the event the standard is not met, the equipment or structure will be removed and managed as hazardous or mixed waste. Treatment residuals generated from extraction and/or destruction technologies used in the closure of RCRA-regulated units (including rinsate) will be characterized in compliance with 6 CCR 1007-3, Part 262.11 and managed accordingly.

6.1.3 Unit Removal without On-Site Treatment

RCRA units that are not decontaminated to meet the "clean closure by decontamination" standard will be removed, size-reduced (if necessary), and packaged to meet the waste acceptance criteria (WAC) of the approved disposal facility. In the event the waste cannot be shipped directly to a disposal facility, it will be stored in compliance with the remediation waste management requirements identified in Operations Order 00-771-231, as may be modified.

6.1.4 Partial Closure

As tank systems are removed, piping may be inaccessible. Inaccessible piping is typically encountered above ground in areas where ventilation and/or other piping has yet to be removed, or piping is embedded in the slab. Once the piping has been tapped and drained (e.g., vented, purged and drained), the piping will be labeled in accordance with Operations Order 00-771-236. Operations Order 00-771-236 requires piping left-in-place to have the following information displayed on the pipe or the outermost portion of the containment, at each end:

- Labels identifying the pipe as abandoned pipe;
- Identification of potentially hazardous material (previously managed in the abandoned piping); and
- Location of other pertinent information (i.e., work packages)

On a quarterly basis, personnel will inspect the "abandoned piping" to verify labeling requirements are in place. Inaccessible above ground piping will be removed before demolition, typically as part of a Dismantlement Set or Decommissioning Area.

Portions of the slab will be removed before demolition based on the contamination levels. Slab removed with embedded piping that had previously stored only characteristic hazardous waste will be managed as non-hazardous waste. Slab removed with embedded piping previously storing listed hazardous waste will be managed as hazardous waste unless the piping is segregated or appropriately treated before disposal.

The ultimate disposition of piping embedded in the remaining slab, as well as piping located beneath the slab, will occur during ER activities. Therefore, final RCRA closure of the remaining piping will be completed in accordance with the ER RSOP or other ER decision document. In order to facilitate final disposition, pertinent characterization information will be transferred to the ER program and recorded in the administrative record. The administrative record will describe the location of any remaining piping, applicable characterization information (process knowledge and sampling results), as well as any other information that will aid the ER personnel in appropriately dispositioning the piping.

6.2 Unit Removal Methods

Most RCRA-regulated units will be closed by removal. The following paragraphs provide an overview of the removal methodologies for gloveboxes and tank systems.

6.2.1 General Methodology for Glovebox Disassembly

Table 10 identifies RCRA-regulated gloveboxes located in the 771 Closure Project not previously covered by an approved CDD. For glovebox units not meeting the historical knowledge confirmation criteria identified in Section 6.1.1.1, closure will occur via disassembly and removal using one of the methods described below. Glovebox units will be removed as one piece or size reduced into smaller sections.

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The level of radioactive contamination, glovebox construction, and the presence of hazardous constituents will determine the method selected. The surface contaminated object (SCO) criteria allow some items to be removed and shipped as its own container. SCO is a Department of Transportation category of low-level waste. SCO dispositioning is preferred because of the significant potential for reducing worker exposure levels and work hours required for removal. SCO dispositioning will be used when the following conditions are met:

- The majority of glovebox surfaces must be accessible by surveying equipment to ensure there is no concealed nuclear material inventory or holdup.
- Both fixed and removable radioactive contamination must be below the maximum allowable DOT levels.
- Inherently hazardous constituents must be removed from the exterior and interior of the glovebox, allowing the glovebox itself to be characterized as non-hazardous. Examples of hazardous constituents include leaded glass windows and lead-lined glovebox gloves. For gloveboxes that previously stored characteristic waste only, this will occur once waste residuals have been removed. Gloveboxes previously storing listed wastes will be considered non-hazardous once the "clean debris surface" standard has been met following decontamination.

In the event the SCO criteria are not met, the glovebox will be size reduced and/or packaged as LLW, LLMW, TRU or transuranic mixed waste (TRM).

The initial disassembly steps are similar for either method. In general, glovebox units will be emptied, disconnected, removed, size reduced (if required), and packaged as described below.

- Waste containers and debris will be removed.
- Non-fixed equipment, tools, or other objects will be removed.
- Non-essential external equipment will be removed.
- Glovebox housekeeping such as cleaning, sweeping, or wiping down interior surfaces will be performed, as required.

At this point, the glovebox units should be empty, clean and dry. The typical order of the subsequent removal steps will be determined by field conditions:

- Building utilities, except ventilation, will be isolated and disconnected from the glovebox (e.g., instrument air, gas, water, and electricity).
- Internal plumbing will be disconnected, drained and removed. Any liquid generated will be collected in 4-liter bottles, sampled, removed and stored until characterization is completed.
- Criticality drain liquid will be removed.
- Fixed hazardous materials such as lead shielding will be removed as required.
- If "debris rule" treatment is feasible, internal surfaces will be wiped down and decontaminated to the extent required in accordance with Section 6.1.2. This may require extensive cleaning using approved methods. Gloveboxes meeting the "clean debris surface" standard will be disposed of as non-hazardous debris. Gloveboxes not meeting the "clean debris surface" standard will either be disposed of as hazardous debris or will be disposed of as LDR compliant hazardous debris following encapsulation in accordance with Section 268 of the Colorado Hazardous Waste Regulations (CHWR).
- The interior of the glovebox will be visually inspected for detection of any remaining visible hazardous waste or constituents.
- A final radiological survey/assay will be conducted.
- A spray fixative will be applied to contaminated surfaces and allowed to harden, thereby encapsulating the loose particulate matter and preventing it from becoming airborne contamination. Some spray equipment used during application may be left in the glovebox. After encapsulation, the glovebox will be removed.

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- The glovebox exhaust will be disconnected from the building ventilation system.
- The glovebox shell will be separated from its legs and either packaged as an SCO or transferred to a size reduction facility.
- Once inside the size reduction facility, remaining hazardous waste, including leaded glass, lead-lined glovebox gloves, etc., will be removed from the glovebox using approved techniques.
- The glovebox will be size reduced, as necessary, and segregated into appropriate waste streams for packaging. These streams include, but are not necessarily limited to, light metal, composite glovebox materials, combustibles, plastic, glass, leaded glass, leaded gloves, solid lead, instruments, tools and HEPA filters.
- Waste will be characterized in accordance with the applicable waste generator instruction (WGI), by Item Description Code (IDC) and in accordance with applicable regulations and WAC. Absorbent may be added to the packages to absorb any residual dampness.

6.2.2 General Methodology for RCRA-Regulated Tank Disassembly

The information included in this section is intended to supercede the phase II requirements in the approved CDDs for the 35 RCRA-regulated tank systems located in Building 771. This section includes tank system removal methodology, including piping strip-out, for Building 774 tank systems. Appendix A contains unit specific information for each tank system. Unit specific information includes the chemical composition of the unit and a narrative description. Appendix B contains figures identifying the boundaries for the tank systems located in Building 774.

6.2.2.1 Piping Removal

Before starting pipe removal activities, the systems will be vented, purged, drained and then drained again by tapping into low points, as required, until no additional liquid can be removed. The system should then be free of liquids. However, residual liquids may be encountered during piping removal. The removal method employed will include provisions to contain residual liquids and/or sludges, which may contain radioactive contamination. Any resulting liquids or sludges will be characterized and treated for final disposal per the applicable WAC.

If a blockage is encountered that cannot be cleared readily during the tap and drain process, additional taps will be installed to minimize the length of the blocked section. Blocked sections will be removed with provisions to contain trapped liquids that may be present. These sections will be size reduced in a manner that accommodates the possibility that trapped liquids may be released to containment. A drainage path will be established through any remaining blockages to ensure that liquid can be drained from the section. If significant blockages are encountered during tap and drain activities, piping removal may be conducted in conjunction with those activities to address the blockages.

Piping removal, size reduction and packaging activities are considered to be dynamic processes, in which improvements in technology will be implemented as a result of newly available methods or lessons learned from prior piping removal operations. The piping removal steps described below may be modified in response to actual operating conditions. Possible modifications include pipe section separation method, containment type for pipe removal, vacuum method, and containment for size reduction. In most cases, piping will be removed in the following manner:

- A glovebag or plastic sleeving will be installed around the section of piping to be removed.
- Vacuum will be applied at one or both ends of a pipe section, and removal will proceed toward a vacuum source.
- At a termination point (TP), the flange will be disconnected or the pipe cut and the remaining pipe stub will be contained by two layers of plastic.
- The pipe sections will be separated by the best available method (e.g., disconnecting at the flanged joint, four-wheel cutter, pipe-crimping tool).

- After the pipe section ends are separated from the rest of the pipeline, the ends of the glovebag/sleeving will be twisted into a "pigtail" formation, from which the ends of the bag can be cut and taped. The pipe section will be removed with taped plastic containment at both ends.
- If any residual liquid or sludge is observed at either end of the removed pipe section, that section will be bagged immediately and taken to a size reduction containment, for size reduction and inspection. The recovered residual liquid and/or sludge will be collected. If no residual liquid or sludge is observed at either end of the pipe section, it will be taken to the size reduction area at an appropriate time.
- Piping sections will be size reduced, as necessary, using an approved cutting method. Crimped pipe sections will be size reduced.
- Pipe sections will be allowed to drain, in a vertical position, as required.
- Pipe section ends will be inspected visually to determine whether a blockage is present within the section.
- Blockages in pipe sections will be penetrated by mechanical means to drain any trapped liquid.
- Pipe sections will be drained of any remaining liquids or sludges, then placed into waste containers. Residual materials will be sampled and immobilized.

The contents and condition of the interior of the pipe section will dictate its disposition as waste. Four typical cases may be encountered:

- The interior surface is dry and contains no visible sign of hazardous waste holdup, so that the pipe section can be disposed as non-hazardous waste (for tanks previously storing only characteristic wastes).
- The pipe section contains solid residual material adhering to the interior walls, which cannot be removed readily. The pipe section will be managed as hazardous or non-hazardous waste, based on process knowledge and/or analytical results for a representative sample of the material.
- A removable blockage or mobile sludge is found, and is removed from the pipe section and sampled. EPA waste codes are assigned to the sludge based on process knowledge or analytical results, and the sludge is treated to meet applicable WAC. The pipe section will be disposed as hazardous or non-hazardous waste, after a hazardous waste determination has been made.
- Piping from listed waste tanks will be disposed of as hazardous waste.

Each IWCP work package, which will be prepared prior to the start of closure activities, will include more specific and detailed instructions for the sequence of piping removal steps, removal and size reduction methodology, characterization process and hold points, and removal of residual materials from pipe sections.

6.2.2.2 Tank Removal

Tanks will be removed and/or size reduced in place after process piping has been removed, and the tanks have been drained. However, some residual solid and/or liquid holdup may be present in the tanks. The descriptions below contain specific provisions to address this possibility, incorporating applicable regulatory requirements and precautions to prevent worker exposure or release of holdup material to the environment.

Tanks may be packaged in one piece or size reduced. Typical waste streams to be generated include light metal, plastic-lined metal, solid lead, combustibles, glass and plastic.

Removal of the tanks is described in the following subsections, according to tank type and relative size. The following disassembly steps are typical and may be altered based on field conditions or lessons learned.

6.2.2.3 Pencil Tank Removal

Pencil tanks are handled in a manner similar to that for large diameter piping. In a few cases, the tank may be size reduced in place because of its size or other circumstances; however, for the majority of cases, activities are as follows:

- Containment will be placed around the vacuum/vent line, and the tank will be disconnected from the exhaust header.
- The tank will be disconnected from its supports.
- The tank will be moved to the size reduction glovebox, and introduced into the glovebox via a "bag-in" procedure.
- The tank will be cut to facilitate handling and packaging. The ends will be separated from the tank body to facilitate inspection of the interior, cleaning and removal of residual materials.
- Tanks or tank sections will stand on end in a drip pan to drain residual liquid and mobile sludge. The material will be placed into containers for further characterization and disposal.
- Each tank or tank section, now open at both ends, will be visually inspected. The interior will be wiped dry. Incidental liquids may be immobilized with absorbent or collected in Kim-wipes as wet combustibles.
- Additional tank cleaning, if required, will be conducted during size reduction. The options for disposition of the tank sections as waste are described in Section 6.3.
- The tank sections will be further size reduced as necessary, and then segregated for final waste characterization and packaging. Absorbent will be added to the packaging to absorb any residual dampness. The tank sections will be packaged in accordance with the applicable WGI.

6.2.2.4 Annular Tank Removal

The dual-wall design of annular tanks leads to special considerations and precautions for size reduction and inspection for residual material remaining inside the tank, which are somewhat more complex than for the other types of tanks. The best available technology will be used for the disassembly and removal of tanks. For example, while relatively small annular tanks may not require size reduction to fit into waste crates, some cutting will be necessary to facilitate inspection of the tank interior for the presence of residual material holdup. In some cases, large tanks or those with special circumstances may be size reduced in place. Typical activities for these tanks are as follows:

- Containment will be placed around the vacuum/vent line, and the tank will be disconnected from the exhaust header.
- The tank will be disassembled from the floor mountings and brought to the size reduction facility, where one or more viewing ports are cut to facilitate inspection of the tank interior.
- The tank will be visually inspected.
- If no residual material is found, the tank interior may be sprayed with a fixative before proceeding with size reduction.
- If residual material is discovered inside the tank, the tank may be cut into sections to provide access to the residual material.
- Residual material (solids and/or sludge) will be removed from tank sections and placed into containers for further characterization and disposal. Incidental liquids may be collected in Kim-wipes as wet combustibles. Waste characterization criteria for the tank pieces, based on the content and condition of any residual material found in them, are described in Section 6.3.
- After the residual material has been removed, the tank interior may be sprayed with a fixative before proceeding with size reduction.
- The tank sections will be further size reduced, as necessary, then segregated for final waste characterization and packaging. Absorbent may be added to the packaging to absorb any residual dampness. The tank sections are packaged in accordance with the applicable WGI.

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6.2.2.5 Raschig Ring Tank Removal

Raschig ring tanks will be inspected visually and/or by real time radiography (RTR) for the presence of liquid/mobile sludge. Small tanks may be placed directly into a shipping container with the raschig rings in place. Each tank packaged in this manner will be examined by RTR to verify the absence of free liquids and/or mobile sludges. In the event the tank fails RTR, the tank will be returned either to Building 771 or 774, and the raschig rings will be removed. Typical activities for Raschig ring tanks are as follows:

- Containment will be placed around the vacuum/vent line, and the tank is disconnected from the exhaust header.
- The tank will be disconnected from its supports.
- The tank will be brought to the size reduction facility, where the rings will be removed and the interior of the tank inspected.
- If no residual material is found upon inspection, the tank will be size reduced as necessary to fit into a waste container. The interior is wiped dry. Incidental liquids may be immobilized in absorbent or collected in Kim-wipes as wet combustibles. The options for disposition of dry tanks or tank sections as waste are described in Section 6.5.2.5 below.
- If residual material is found in the tank, the methodology for its removal is determined. This is likely to include cutting of the tank into sections in order to isolate the residual material in one or two sections for ease of removal.
- The cut tank sections will stand on end in a drip pan to drain residual liquid and mobile sludge. Non-mobile sludge is removed by mechanical means. Residual material (sludge and/or solids) will be placed into containers for further characterization and disposal.
- After residual materials have been removed, each tank or tank section will be visually inspected. The interior will be wiped dry. Incidental liquids may be immobilized in absorbent or collected in Kim-wipes as wet combustibles.
- Size reduction, as necessary for waste packaging, will be conducted using the best available technology.
- The tank or tank sections are segregated for final waste characterization and packaging under the options listed in Section 6.3. Absorbent may be added to the packaging to absorb any residual dampness. The tank sections will be packaged in accordance with the applicable WGI.

6.2.2.6 Removal of Other Tanks

Three options exist for the removal of tanks that do not contain raschig rings, are not annular, or pencil tanks:

- Package the tank in one piece as a SCO,
- Package the tank in one piece because size reduction is not necessary, or
- Size reduce the tank into sections for packaging.

Selection of an option will be based on the level of radioactive contamination, tank construction and the presence of hazardous constituents. The SCO method is desirable because of a significant reduction in both worker exposure levels and staff-hours required for size reduction and removal activities.

After the vacuum/vent line is disconnected, the tank will be packaged in one piece in place, with containment provided on site as necessary. The tank may be designated as an SCO if it meets the criteria. If the tank cannot be packaged in one piece, it will be size reduced and the waste streams segregated for packaging, either in place or within the size reduction facility.

6.2.2.7 General Conditions for Tank Sections and Residual Materials

The condition of the tank interior and the composition of residual material inside any of the tanks will dictate that tanks disposition as waste. Four typical cases may be encountered:

- The interior surface is dry and contains no visible sign of hazardous waste holdup, so the tank can be disposed as non-hazardous waste (for tanks previously storing only characteristic waste).
- For tanks previously storing listed wastes, the tank sections typically will be decontaminated in accordance with Section 6.1.1.2 and disposed of as non-hazardous debris. If decontamination is not feasible, the tanks will be disposed of as hazardous or mixed waste.
- The tank contains solid residual material adhering to the interior walls, which cannot be removed readily. The tank will be managed as hazardous or non-hazardous waste, after a hazardous waste determination has been made based on the analytical results for a representative sample of the material.
- A mobile sludge is found and is removed from the tank and sampled. EPA waste codes are assigned to the sludge based on process knowledge or analytical results. The sludge will either be treated to meet applicable waste acceptance criteria or stored on-site pending ultimate disposition. The tank will be disposed as hazardous or non-hazardous waste, after a hazardous waste determination has been made.
- Each IWCP work package, which will be prepared prior to the start of tank removal activities, will include more specific and detailed instructions for the sequence and methodology of tank removal, size reduction, waste characterization and hold points, and separation of residual material from tank sections.

6.3 DISPOSITION OF CLOSURE-RELATED WASTES

Metal and other types of waste generated during closure activities will be managed as remediation waste. It is assumed that the Site's waste management and treatment systems will be available to receive wastes generated by these closure activities. If deemed appropriate, Building 771/774 may develop treatment systems for select waste streams.

Glovebox components and pieces that are radioactively contaminated will be managed in accordance with the requirements of the RFETS Radiological Control Manual and Health and Safety Practices Manual, and will be packaged for disposal in accordance with applicable waste acceptance criteria.

Non-SCO glovebox metal waste will be assayed for categorization as either LLW or TRU, depending on the amount of actinide present, and will be characterized in accordance with applicable regulations. Size-reduced glovebox sections likely will be categorized as TRU waste and packaged for disposal at WIPP. The presence of metal pieces with lead shielding will cause that metal waste to be labeled as mixed waste.

A glovebox shell that has met the SCO criteria does not require additional assay. It is a non-hazardous LLW and will be packaged for disposal at NTS.

Other segregated waste types identified in the WGIs will be characterized, placed into waste containers and managed in accordance with applicable regulations and the Site Waste Management Programs. These waste drums and crates will be analyzed by non-destructive assay to categorize them as LLW or TRU waste. They will be placed in appropriate on-Site storage areas before off-Site disposal. If mixed waste is generated for which treatment/disposal options do not currently exist, it will be added to the Site Treatment Plan (e.g., LLW with actinide activity levels between 10 and 100 nCi/g).

6.4 Professional Engineer Certification

Within 60 days of completing closure of the final hazardous waste unit in Building 771/774, an independent, registered Professional Engineer (P.E.) will certify the unit has been closed in accordance with Section 6.1.1.2. Individual unit closures will not require a P.E. certification.

6.5 Closure Documentation

RCRA unit closure activities will be documented in the Pre-Demolition Survey Report, which will be completed before building demolition. Upon final closure of each RCRA-regulated unit, the Site's Master List of RCRA Units will be updated to reflect the new closure status of the unit and the unit will be removed from the RCRA Part A Application and Part B Permit in accordance with the applicable regulations.

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7 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Decommissioning and ER activities conducted at RFETS must comply with the ARARs under the CERCLA[29]. ARARs have been identified for the complete scope of decommissioning activities, including demolition, and they are contained within the ***RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities***[30] and the ***RSOP for Facility Disposition***[31]. Section 7.1 identifies the ARARs for the under-building remediation activities, which are detailed in Section 4.5 of this DOP.

7.1 Under-Building Contamination Remediation

Under-building contamination remediation will consist of source removal and is expected to be similar to other Site accelerated actions. The term source removal refers to the source of the under building contamination. Once the source is removed and the affected material is removed or remediated, source removal has been completed. The substantive Federal and State ARARs are identified in the following paragraphs.

7.1.1 Chemical-Specific Requirements and Considerations

The only chemical specific ARAR is the National Emission Standards for Hazardous Air Pollutants (NESHAP) for radionuclides. The NESHAP asbestos requirement has been addressed based on the assumption that asbestos-containing materials will be removed from the UBC areas before initiating excavation.

7.1.1.1 NESHAPs

The 40 CFR §61.92 is applicable and requires that no member of the public receive more than 10 mrem per year above background from airborne sources of radiation. Demonstration of compliance with 40 CFR §61.92 is performed on a Site-wide basis taking into consideration Site sources. After pre-remedial characterization is complete, air monitoring requirements for Buildings 770, 771, 771C, and 774 remedial actions will be determined and implemented if necessary.

7.1.1.2 Action Level Framework

The Tier 1 soil action levels for VOCs and radionuclides provided in the RFCA Action Level Framework are the cleanup target levels (see Table 5).

7.1.2 Action-Specific Requirements and Considerations

The following action-specific requirements and considerations were evaluated specific to the UBC source removal at Buildings 770, 771, 771C, and 774:

- Identification and listing of hazardous wastes;
- Definition of remediation waste;
- Land disposal restrictions;

[29] Certain State of Colorado Radiation Control Regulations pertaining to decommissioning and environmental releases may be relevant and appropriate to building decommissioning and environmental restoration activities, particularly the cleanup of the soils. The RFCA parties are finalizing this list and a subsequent modification to the documents referenced will be required.

[30] The RFCA Standard Operating Protocol for Facility Component Removal, Size Reduction, and Decontamination Activities is currently undergoing public comment and is scheduled for approval in December 2000.

[31] The RFCA Standard Operating Protocol for Facility Disposition, approved October 5, 2000.

- Temporary unit tank and container storage; and
- VOC and particulate emission controls.

7.1.2.1 Identification and Listing of Hazardous Waste

Requirements governing the identification and listing of hazardous wastes are applicable to the source removal (See 6 CCR 1007-3, §261). Based upon process knowledge and characterization data, the contaminated soil may contain F001/F002 solvents that were released from the building processes.

7.1.2.2 Remediation Waste

The definition of remediation waste is applicable to wastes and media generated in conjunction with this action. Remediation waste is defined as: *"all solid and hazardous wastes, and all media (including groundwater, surface water, soils and sediments) and debris, which contain listed hazardous wastes or which themselves exhibit a hazardous waste characteristic, that are managed for the purpose of implementing corrective action..." (See §260.10).*

7.1.2.3 Closure Requirements

This discussion addresses the requirements necessary to meet the closure performance standards for the temporary unit (TU) tanks and containers (§264.553(a)). Following the completion of excavation activities, any TU tanks and containers will be decontaminated according to Site procedures. In general, any large-scale decontamination will take place at the PA decontamination facility, or the main decontamination facility located in the contractor's yard. TU tanks and containers will be managed and closed to meet the substantive requirements of RCRA. TU tanks, containers, and any ancillary equipment that come into contact or contain liquids associated with remediation waste will be managed to control the waste and prevent releases into the environment. If the tanks, containers, and equipment have further use, they will be moved to one of the approved decontamination facilities and cleaned in accordance with applicable procedures. At the end of their useful life, the tanks, containers, and equipment that were exposed to remediation waste will be cleaned to meet the requirements of the Section 6 of this DOP. If cleaning efforts fail to produce results as set forth in the closure plan, the tank, container, or equipment will be disposed of as hazardous waste.

7.1.2.4 Volatile Organic Compound and Particulate Emission Controls

The Colorado Air Pollution Control Regulations require the application of reasonably available control technologies (RACT) to new sources of VOC emissions (5 CCR 1000-3, Regulation No. 7, "Reg. 7"). VOCs may be emitted during soil excavation and transport. The Colorado Air Quality Control Commission has found that for sources of VOCs less than 1 ton, RACT typically requires no controls. Based on the low concentrations of VOCs anticipated in the soil, specific VOC control measures will not be employed during excavation and transport. However, VOC controls will be put into place if contaminant concentrations determined during the characterization or remediation activities indicate that these are appropriate.

7.1.2.5 Location-Specific Requirements and Considerations

No location-specific requirements or considerations unique to the activity were identified and Site procedures will be followed.

8 ENVIRONMENTAL CONSEQUENCES

RFCA mandates incorporation of National Environmental Policy Act (NEPA) values into RFCA decision documents. The following paragraphs summarize the results of the environmental impact analysis, which was performed for the UBC remediation activities. Environmental consequences have been identified for the complete scope of decommissioning activities, including demolition, and they are contained within the ***RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities*** and the ***RSOP for Facility Disposition***.

The UBC remediation activities will be performed before the demolition of the buildings. Because the remediation will occur within a contained area, potential environmental impacts are limited. Air emissions can be better controlled, and the contaminated areas will be protected from rain, wind, and other environmental factors. Human health and safety will be protected through implementation of mandatory Site safety requirements.

8.1 Geology and Soils

Although the primary emphasis of the action is to remove soils underlying the buildings, the impact on soils and geology will be minimal. Contaminated soils will be removed, and uncontaminated soils will be placed back into the excavations. Process lines under the buildings will be removed along with associated contaminated soils. Contaminated lines and soils will be removed to the perimeter of the building; uncontaminated lines will be grouted or foamed and left in place. Because the basement or below grade areas will be filled with an approved fill material, remaining uncontaminated lines will not likely provide a future pathway for water migration. Additional contamination of soils during the UBC remedial activities is not expected because the remainder of the building structure will have been decontaminated before excavation. Soils and geologic features outside of the building perimeters will not be affected.

8.2 Air Quality

Air quality may be affected during the UBC remediation due to the release of dust, radionuclides, and other hazardous air pollutants. The process of cutting, moving, and containerizing concrete and soils will free contaminants and fugitive dust within the building. These air emissions would be a health and safety concern for workers; air contaminants in the buildings are addressed by the Site Health and Safety Program. The use of PPE and industrial hygiene monitoring will be used as necessary.

The remedial actions will occur after ventilation ducting is removed. The exterior building walls and roof will largely remain intact during the remedial activities, but doors and windows may have been removed. To ensure that air pollutants generated by the activities remain within safe release limits, outdoor ambient air monitoring will be conducted in accordance with the *Integrated Monitoring Plan*. If a monitoring limit is exceeded, operations will be stopped, the reason for the release will be determined, and actions will be taken to prevent further releases.

Fugitive dust and other criteria air pollutants will be generated during the transport of contaminated concrete and soils to storage and disposition facilities. Although 200 to 230 shipments may be needed to remove contaminated soils, the criteria emissions will be generated over an extended period of time (i.e., an estimated 114 days), and will therefore not be an air quality concern.

8.3 Water Quality

Surface water will not be impacted, since the activities will occur inside buildings and materials or wastes removed from the building will be in containers. Groundwater quality will not be affected during the remedial activities. However, groundwater may flow into the excavations. If water flows into the excavations, it will be removed and characterized. Water will be managed in accordance with *Control and Disposition of Incidental Waters* (1-C91-EPR-SW.01). To ensure that groundwater is not contaminated, groundwater monitoring will be conducted. If monitoring limits are exceeded, operations will be stopped until the source of the contamination can be identified and further release prevented. Because water will be properly managed, adverse environmental impacts will be avoided.

8.4 Human Health and Safety

Risks to worker health and safety during the UBC remediation will be similar to risks faced by workers during decontamination and disposition activities. Workers will still be exposed to heavy machinery and repetitive motion tasks. A unique physical hazard may exist if building support structures must be removed (e.g., to remove underlying contaminated concrete and soils). If contamination has traveled under an interior pilaster, soil will be removed up to the pilaster, a saddle will be built to transfer any loading that may occur, and the pilaster will be removed. Removal of the contaminated soil will follow. This procedure will increase the safety risk to workers in the immediate area. Although the procedure is unusual, the physical hazard (e.g., building collapse) associated with such activities will be managed through appropriate engineering and administrative controls.

Workers may be exposed to chemical and radiological hazards. These risks will be managed through the appropriate use of PPE, engineering controls, and administrative controls, as described in Section 4.5.5, Worker Health and Safety. Because the existing structure will remain intact during the UBC remediation, contaminants will be better contained and the potential impact to non-involved workers and the public will be lessened.

8.5 Plants and Animals

Because the UBC remediation will be done within the confines of the existing structure and foundation of Building 771, plants and animals will not be affected.

8.6 Waste Management

Waste management includes temporary storage and transportation needs. Remedial activities will generate radiologically contaminated wastes and hazardous wastes that will require storage and off-site transportation and disposal; uncontaminated concrete and soils will be placed back into excavations at the building site. As much as 10,000 cubic yards of waste may be generated during the removal of contaminated concrete and soils.

Contaminated concrete and soils removed during the remediation will be placed in appropriate containers and stored on-site until moved to permitted storage areas on-site or shipped to approved off-site disposal sites. Wastes will be characterized, stored, and disposed of in accordance with Site waste management procedures, and state and federal regulations. Temporary storage at the point of generation should not be a concern, due to adequate floor space for storage within the facilities. However, subsequent movement to other Site storage locations and eventual shipping will be cumulative with the generation and movement of other Site wastes.

Waste minimization will be used in the planning and management of the wastes. Remedial activities will be evaluated for waste minimization potential and suitable minimization techniques will be implemented, as practicable.

8.7 Historic Resources

Building 771 has been identified as historically significant as an essential component of the weapons production activities at RFETS. Negotiation to determine the appropriate mitigative measures between DOE and the State Historic Preservation Officer have been completed, and Building 771 is subject to documentation requirements (construction drawings and photographs). The required documentation for Building 771 has been completed in the *Historic American Engineering Record for the Rocky Flats Plant Historic District* (HAER-CO-83-T), and no further action is needed regarding historical resources.

8.8 Noise

Noise levels will increase within the buildings as remedial activities occur. However, workers involved in those activities will be required to use appropriate hearing protection devices during such activities. Because the higher noise levels will take place indoors, collocated workers and the public will not be affected.

8.9 Socioeconomic Effects

Workers needed to complete the remediation will be a small percentage of workers employed during decommissioning and other activities at Site buildings. The remedial activities will also be temporary. Therefore, a socioeconomic impact will not be noted.

8.10 Cumulative Effects

Cumulative effects are most likely to be noted in the management of waste. About 10,000 cubic yards of hazardous, LLW, and LLMW may be generated during remedial activities. Most of the waste would be contaminated concrete and soils that are removed from the excavations.

Waste storage may become a concern if waste is moved to other storage locations at RFETS at about the same time that other Site activities are generating similar wastes. However, about 10,500 cubic yards of LLW and LLMW were managed and disposed of during July 2000 (K-H, 2000a), indicating that the 10,000 cubic yards of waste from UBC activities, which will be generated over about four months, can be properly managed.

Shipment of the wastes will require up to about 230 truck shipments, which if evenly spread out for four months would result in an additional two to three truckloads per work day. Because roadways adjacent to the Site (Highway 93 and Indiana Avenue) are currently rated poor (JeffCo, 2000), the added traffic would have an adverse impact. However, the truck traffic will increase while the Site's commuter traffic begins to decrease (the result of decreasing worker numbers at the Site). Since commuter traffic comprises about one-third of traffic on adjacent roads (JeffCo, 2000), the impact of the truck shipments will likely be offset. In addition, since the additional trucking will be temporary, the adverse impacts to local traffic will be temporary.

8.11 Mitigation Measures

The following mitigation measures will be taken to lessen potential negative impacts to personnel safety and the environment:

- PPE and other personal safety equipment will be used as required to maintain safe working conditions,
- Engineering and administrative controls will be implemented to prevent unsafe conditions if walls or other supports are affected during UBC remediation, and
- Exterior building walls will remain intact throughout the excavation, therefore reducing the release of contaminants into the surrounding environment.

8.12 Unavoidable Adverse Effects

The proposed activities will unavoidably increase air emissions, water discharges, localized noise levels, radiation and chemical exposures to workers, and the potential for industrial accidents. All of these increases will be temporary.

8.13 Short-Term Uses and Long-Term Productivity

Cleanup of spill sites within the buildings will improve the long-term productivity of the Site. Contamination that could migrate elsewhere will be removed; a potential source of soil and water contamination will no longer exist. Use of the Site for a variety of other possible future short- and long-term purposes is supported by the remedial actions.

8.14 Irreversible and Irretrievable Commitments of Resources

The use of funds, labor, equipment, fuel, tools, PPE, waste storage drums, and similar items are resources that will be irreversibly and irretrievably committed.

9 IMPLEMENTATION SCHEDULE

The recent Site-wide re-baselining effort has resulted in the development of a detailed schedule and basis of estimate for completion of the 771 Closure Project. A copy of this schedule is provided in Appendix C. The schedule is not an enforceable part of this DOP, and DOE or its contractor may alter the schedule without prior notification to or approval by the LRA. Significant schedule changes will be shared with the LRA as part of the RFCA consultative process.

10 RECORDS DISPOSITION

The 771 Closure Project records consist of the CERCLA AR File, the RCRA Operating Record, the Closure Project Files, and the Decommissioning Closeout Report.

10.1 CERCLA Administrative Record File

This section identifies the documents that constitute the AR File for the 771 Closure Project. Upon completion of the public comment period, comments received from the public will be added to the AR File, along with the responsiveness summary and the LRA approval letter. LRA approval of this DOP and associated major and minor modifications constitutes approval of the AR File.

This major modification will be submitted for public comment. This major modification and comment received from the public will be added to the AR, along with the responsiveness summary and the LRA approval letter. LRA approval of this major modification into the DOP constitutes approval of the documents being added to the 771 AR. The following documents will be added to the 771 Closure Project AR for this major modification:

- 771 Closure Project Reconnaissance Level Characterization Report Supplement
- 771 Closure Project DOP modification Responsiveness Summary
- Final 771 Closure Project DOP modifications
- JeffCo, 2000. *Jefferson County, Colorado, Northwest Quadrant Study Phase I Final Report*, http://projects.ch2m.com/jeffco/nw_quadrant/nwq_phase_1.htm. March 2000.
- EG&G 1995a, *Geologic Characterization Report for the Rocky Flats Environmental Technology Site,* 1995.
- EG&G 1995b, *Hydrogeologic Characterization Report for the Rocky Flats Environmental Technology Site,* 1995.

The following information repositories have been established to provide public access to the 771 Closure Project AR:

U.S. Environmental Protection Agency (EPA)
Region VIII
Superfund Records Center
999 18th Street, Suite 500
Denver, Colorado 80202-2466
(303) 293-1807

Rocky Flat Citizens Advisory Board (RFCAB)
9035 Wadsworth Parkway
Suite 2250
Westminster, Colorado 80021
(303) 420-7855

Colorado Department of Public Health and Environment (CDPHE)
Information Center, Building A
4300 Cherry Creek Drive South
Denver, Colorado 80220-1530
(303) 692-3312

U.S. Department of Energy Rocky Flats
Public Reading Room
Front Range Community College Library
3645 West 112th Avenue, Level B
Westminster, Colorado 80030
(303) 469-4435

10.2 RCRA Operating Record

RCRA records, including inspection records, will be maintained with the existing Building 771 RCRA Operating Record. Upon completion of the 771 Closure Project, the RCRA Operating Record will be transferred to Site Records Management for storage.

10.3 Closure Project Files

Project-specific documents will be stored in the 771 Closure Project Files until final closure is complete, at which time the Closure Project Files will be processed through Site Records Management and archived. The Closure Project Files will contain characterization documentation, inventory sheets, project correspondence, comment resolution, IWCP work packages, and additional information that is a direct result of the work involved in the project. Maintenance of the Closure Project Files is a Site requirement.

10.4 Decommissioning Closeout Report

A Decommissioning Closeout Report will be prepared for the 771 Closure Project after decommissioning work has been completed and analytical data received. The report will consist of a brief description of the work completed, including any modifications or variations from the original decision document. The report will also contain analytical results, including the results of confirmatory sampling, as well as a description of the quantity and characteristics of the waste generated and how the waste is stored or disposed. The expected outline for the Closeout Report is shown below. The format may change to meet the needs of the project.

- Introduction
- Remedial action description
- Dates and duration of specific activities (approximate)
- Verification that remedial action goals have been met
- Verification of treatment process (if applicable)
- Radiological analysis (if applicable)
- Waste stream disposition
- Site reclamation
- Significant deviations from the decision document
- Final disposition of wastes (actual or anticipated)
- Next steps (e.g., interim monitoring, transfer to Environmental Restoration Program)

When completed and approved by DOE and the LRA, the Decommissioning Closeout Report will be submitted to the 771 Closure Project AR Post-decisional File.

11 COMMENT RESPONSIVENESS SUMMARY

The following table is the responsiveness summary addressing public comments.

Mary Harlow, City of Westminster Comments on Modification 4 and the Proposed Action Memorandum for Under Building Contamination Remediation for the 771 Closure Project Decommissioning Operations Plan, December 11, 2000		
No.	**Comment**	**Response**
1	Section 3.1, Building History and Description, page 13 This section understates the events that have occurred in building 771. The building chronology indicates that there was a glovebox fire in the building in 1957, which resulted in the transfer of a plutonium foundry, fabrication and assembly operations to building 776/777. Comment: It would seem important to discuss the nature and extent of the fire to include the fact that the fires spread to 8 larger glovebox filters, which were burned through, and the fire then spread to the main filter plenum. False walls and ceilings were installed in some areas to enclose contamination resulting from the fire. Understating the condition of the building may result in underestimating the protective measures that will need to be taken to protect workers during these hazardous activities.	This is the standard historical information from the Historic American Engineering Record, and it is the appropriate level of detail for the DOP. Additional historical information may be used to assess hazards before initiating work activities as indicated in the RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities, which is incorporated into the DOP through reference. Additional information is also available in the reading rooms and through the 771 Closure Project. The DOP will not be the sole source of information used to determine protective measures for worker safety.
2	Section 1.2, Decommissioning Under the Rocky Flats Agreement paragraph 2 page 4 The second sentence reads "Type 2 buildings do not have significant contamination or hazards, but need some level of decontamination. Comment: Please define significant. What percentage of the building has to be contaminated, what are the contaminants of concern before a building has significant contamination.	The term significant is taken from a definition in the Rocky Flats Cleanup Agreement. There are no numeric values assigned to the term significant. Facility typing is addressed in the Reconnaissance Level Characterization Report. This report contains an evaluation of the historical usage of the area as well as sample and survey results that provide current contamination information. This information is assessed, DOE determines the type of the facility, and the LRA concurs to that typing.
3	Table 3, Set Descriptions. Pages 21-22. Many of the sets of gloveboxes to be removed are highly contaminated and according to former workers are at infinity levels. Set 62 discusses removing hydrofluorninator and scrubber. Comment: HF is a very hazardous acid and any work in areas where it is stored or used should be listed as Level 3 areas. Extra worker protection such as respirators should be required in these areas.	Set 62 is contained within Building 771, which is a Type 3 facility. There are no specific designations within a set to designate a numeric "level" for contamination. All work activities will have the hazards assessed before initiating those work activities as indicated in the RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities, which is incorporated into the DOP through reference.
4	Table 4. Area Descriptions page 24: Under the AG section it indicates that the tunnel areas interior surfaces will have paint removed to facilitate PDS. The description does not mention the floor areas in these tunnels which also should be characterized for contamination. Water from the 771 fire was known to be at least an inch high in the 76 tunnel. Significant contamination may be found on the floor surfaces and soils.	The following sentence was added to the area description: "It is anticipated that the floors and lower portion of the walls will need to be decontaminated."

Mary Harlow, City of Westminster Comments on Modification 4 and the Proposed Action Memorandum for Under Building Contamination Remediation for the 771 Closure Project Decommissioning Operations Plan, December 11, 2000		
No.	**Comment**	**Response**
5	Pagragraph3 page 27 This section is confusing please provide a description of where scaffolding will be installed to remove ceiling contamination. Is this throughout the building?	The first sentence of this paragraph was removed and replaced with the following: "Scaffolding will be installed throughout the facility, as necessary, to gain access to higher elevation work. Ceilings and upper walls will be decontaminated prior to lower walls and floors."
6	Paragraph 6, page 27: The paragraph states that "floor slabs exhibiting penetration of contaminants greater than one inch will be removed and disposed of as low level or low-level mixed waste." Surface contamination will be "fixed" and the slabs removed using concrete floor saws. Comment: If the surface contamination is fixed the concrete does not automatically become low level waste. Please provide information as to the worker safety and resuspension hazards associated with fixing contamination and then sawing through the " fixed" concrete.	As indicated on page 25, statements are made throughout the DOP on what type of waste an activity will create. These statements are based on process knowledge and included for information purposes. All waste will be characterized and packaged in accordance with Site Waste Management Programs. All work activities will have the hazards assessed before initiating those work activities as indicated in the RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities, which is incorporated into the DOP through reference.
7	Section 4.4.4 Room l41, pages 28-29: This section. is very confusing. The first paragraph on page 28 states that "Room 141 is sometimes referred to as an infinity room." Comment: The sentence should be rewritten to state Room 141 is an infinity room and then in parenthesis define infinity room or use a footnote at the bottom of the page to describe the level of radionuclide contamination in this room. Former workers that were in room 141 when the jack hammer went through the concrete indicate that "green feed" also ran through the floor in that room. The historical records and current worker knowledge should be reviewed to validate this information. The concrete on the floor in room 141 is no doubt highly contaminated. The City of Westminster requests that the process for removing and decontaminating the infinity room be accompanied with drawings of the area that indicated the process for removing this room. A logic flow diagram that is easier to follow and understand would also be helpful. The process as defined in this section affords ample opportunity for worker and further building contamination.	The following text was added for clarification: "Room 141 will be completely removed. Following second floor decontamination activities, the elevated floor structure that surrounds Room 141 will be removed. The interior of Room 141 will be fogged, and a complete containment structure will be constructed to facilitate removal of concrete structural material. Concrete walls, ceiling, and floors will be removed, dispositioned as TRU and LLW, and subsurface media will be protected prior to transfer to ER for remediation activities." All work activities will have the hazards assessed before initiating those work activities as indicated in the RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities, which is incorporated into the DOP through reference. The term infinity is improperly used at Rocky Flats and was only included in the DOP as a reference because that is how Room 141 is known on-site. Quotations have been put around the term to indicate that it is a colloquialism.

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Mary Harlow, City of Westminster Comments on Modification 4 and the Proposed Action Memorandum for Under Building Contamination Remediation for the 771 Closure Project Decommissioning Operations Plan, December 11, 2000		
No.	**Comment**	**Response**
8	Section 4.5.3 Data Summary: The second paragraph page 31 indicates that " underbuilding contamination will be limited to the immediate underlying backfill material and that the flow of groundwater into the building and/or footing drains, instead of away from the building, limits contaminant migration. Comment: The city requests that sampling also be undertaken away from the building in the area of the infinity room to ensure that the groundwater located under this room has not seeped towards Walnut Creek. Please provide information as to control of the groundwater while awaiting ER in this area.	It is anticipated that groundwater will be encountered during remediation activities and may be encountered when excavating the soil behind the south 771 building wall. It is anticipated that this groundwater will be minimal and will be pumped from the excavation area into a containment and managed in accordance with the Incidental Waters Program. The DOP only addresses under building contamination remediation. Characterization of the area outside the facility footprint will be addressed in other ER documents.
9	Section 4.5.4.5 Completion of Remedial Action: The paragraph indicates that after the environmental remediation actions are completed the equipment will be decontaminated. Comment: Please provide information on the decontamination of the large tracked equipment used to bring down the building prior to its being returned to the rental company.	Equipment decontamination will be conducted at the work site or at one of the two decontamination pads on-site. All equipment will be surveyed before the equipment leaves the Site.
10	Section 4.5.5 Worker Health and Safety: This section states that a "Site Specific Health and Safety Plan will be developed to address the safety and health hazards of each phase of site operations and specify the requirements and procedures for employee protection. In addition DOE Order for Construction Project Safety and Health Management, 5480.9A applies to this project. The order requires the preparation of activity hazard analyses to identify each task, the hazards associated with each task and the cautions necessary to mitigate the hazards." Comment: Since decommissioning and decontamination work is currently underway in building 771 when will the health and safety plan and hazard analyses be completed. Protection of worker health and safety during the activities in building 771 is important to the City of Westminster.	This section is a subsection to the Environmental Restoration Section and refers to the Health and Safety Plan for environmental restoration activities. The Health and Safety Plan will be available prior to the remediation work activities being initiated.

Mary Harlow, City of Westminster Comments on Modification 4 and the Proposed Action Memorandum for Under Building Contamination Remediation for the 771 Closure Project Decommissioning Operations Plan, December 11, 2000		
No.	**Comment**	**Response**
11	Section 4.7.1.3 Site Preparation page 39: The last paragraph indicates that there will be temporary stockpile areas for debris, and that materials appear likely to be in temporary storage for a long period and that a more permanent area will be created that will encompass additional erosion or run-on/run off controls as necessary. Comment: The document needs to document the controls such as berms that will be used to protect surface water. Additionally, a fixative will need to be added to materials that are stockpiled in order to minimize resuspension of residual contaminants as a result of wind and weather dispersion. If there is residual contamination other environmental impacts should be evaluated as well as safety issues.	The RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities contains extensive information on the control of surface water and is incorporated in the DOP by reference.
12	Section 4.7.1.5 Demolition of Outbuildings page 40: the section indicates that "dependant upon identification or investigation of environmental media concerns, the concrete slab/foundation associated with the building will be broken up using a vibratory hammer attachment to the excavator. Comment: Environmental media concerns is a vague statement. Language should be inserted that specifically spells out the concerns including the proximity of plumes. Use of a vibratory hammer could open up pathways for contaminant movement and could damage utility lines nearby. Project specific monitoring needs to be considered for this project.	The following sentence has been added: "Additional information obtained from in-process characterization, ER characterization, and other data obtained during the work will also be used to determine the appropriate techniques for slab removal and excavation."
13	Section 4.7.1.8 Demolition of the main building 771 structure page 41 The section states that "the concrete wall will be removed to a point a minimum of 3 feet below the proposed grade. This will be accomplished using the tracked excavator, working along the indicated project of the final cap (minus 3 feet)." Comment: Use of caps on the foundation of building 771 has not been approved. The foundation of this building should be removed and the hillside behind it stabilized. Leaving the foundation in place poses a physical hazard.	The term cap has been removed.

Mary Harlow, City of Westminster Comments on Modification 4 and the Proposed Action Memorandum for Under Building Contamination Remediation for the 771 Closure Project Decommissioning Operations Plan, December 11, 2000		
No.	**Comment**	**Response**
14	Section 4.7.2 Demolition of the Stack page 43. The first paragraph states that the demolition plan indicates that the stack structure will be demolished using explosives. The demolition of the stack will be developed around the layover method allowing the stack to fall due east toward Pond 207 C into a prepared trench. Comment: the lead regulatory agency must approve and the local governments that are downwind from the site must be consulted prior to any use of explosives. Has the contractor considered foaming the interior of the stack prior to taking it down to address the problem of the dust that will be generated during the activity?	The inclusion of explosives in the DOP is the first step in evaluating the use of explosives on the 771 stack. The RSOP for Facility Disposition indicates that the Site must notify the LRA and stakeholders that explosives may be used as soon as it is proposed in the planning process. The DOP accomplishes that notification and provides the initial details on why explosives are proposed as the demolition method. Additional information on the explosives and particular methodology will be developed as the characterization information is completed and planning continues. A number of options for demolition and controls are being considered and will be discussed at the D&D pizza meetings, as it is available.

Mary Harlow, City of Westminster Comments on Modification 4 and the Proposed Action Memorandum for Under Building Contamination Remediation for the 771 Closure Project Decommissioning Operations Plan, December 11, 2000		
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15	Table 9, page 54-55 The section indicates that the recycled concrete will not be transported and stockpiled as indicated in the RSOP for Recycling Concrete. An exception to the RSOP for Recycling Concrete, which will eliminate the need to stockpile and size reduce the concrete while still meeting the lifetime subsidence requirement. Comment: The initial RSOP cited the costs of transporting rubble offsite to a nearby landfill as a valid reason for stockpiling onsite. The 771 Mod to the DOP now states that it is too costly to transport the fill to the current stockpile onsite. There is no plan to place the rubble from this building on an impervious surface. A potential exists for the downward migration of non-radiological materials into the underlying soil columns. Surface precipitation may dissolve materials and carry them into the underlying soils and groundwater over time. Non-toxic surfactants will need to be applied to stockpile to prevent migration of fines and other dissolved materials that may have contaminated concrete surfaces due to past facility operations and to keep wind transport to a minimum . If the total land surface involved with stockpiling and processing of concrete exceeds 5 acres then a pollution prevention runoff plan must be prepared. Rubble backfill sites may constitute disposal of a non-hazardous solid waste and therefore require a permit. Slumping over the lifetime of the backfill area as stated in the Rubble Disposition RSOP is 1%. Would this still be the case of concrete slabs are placed in the ground? It would seem that precipitation percolation pathways would be created due the fact that there would be crevices where the concrete edges do not meet. . There are no provisions to characterize the fill sites for geotechnical purposes. . The long-term burial of concrete slabs may impact groundwater. Current seasonal groundwater levels may reach 10 to 20 feet. Percolation of groundwater through the fill may affect the pH of the groundwater due to the alkalinity of the concrete. Impacts to groundwater from disposition of rubble will need to be considered. Back-filled areas should be mapped along with geostructural data. This information should be part of the long-term stewardship record.	The proposal to not transport, stockpile, crush, transport, and backfill the concrete is based on cost, but there are several other benefits to not handling the material as much as previously proposed. In addition to a cost benefit, by reducing the amount handling associated with the concrete, the health and safety risk associated with the activity decreases. By not crushing the concrete, the dust generation potential decreases, as crushing operations are an inherently dusty. In addition, the large slabs will produce a more stable surface and should reduce the compaction effort required to achieve the lifetime subsidence of less than 1%. This process will still require engineering, and if the slabs can not be placed in the void to achieve the lifetime subsidence requirements, then the material will have to be crushed. The Pollution Prevention requirements will apply to the Project regardless of how the material is placed in the void and if it is or is not crushed. It is anticipated that the slabs would have less impact on groundwater then crushed concrete because there will be less chance for dissolution that could increase groundwater pH. The voids around the slabs will be filled with a finer material, probably soil, and the voids would be less contiguous then if the concrete was crushed. Therefore, the percolation of precipitation through the fill would be less with the placed slabs then the crushed concrete. Records will be maintained on the placement of backfill.

Board of Directors of the Rocky Flats Coalition of Local Governments comments on the *771 Closure Project Decommissioning Operations Plan Modification 4 and Proposed Action Memorandum for Under Building Contamination Remediation*		
No.	**Comment**	**Response**
1	The Coalition shares the Site's goal of conducting the remediaton in the safest, most effective manner. One issue of concern to many Board members is the use of explosives, and in particular, the use of explosives to take down the 771 stack. We appreciate the Site's commitment to discuss with the Coalition and others the demolition plan that will detail how explosives will be used to demolish the stack. In order for us to evaluate the use of explosives, we need the following additional information: (1) descriptions of situations in which explosives will be used, (2) reasons why explosives will be used instead of other methods, including the risks associated with all options, (3) explanation of whether explosives will be used solely on free release materials, (4) descriptions of use of explosives at other DOE sites with plutonium and americium contamination, and (5) description of the methodology that will be used to control emissions of airborne contamination and fugitive dust. The Board recommends Section 4.7.2, Demolition of the Stack, be expanded to better document this portion of the project. Similarly, the DOP should clearly state whether or not the use of explosives during the 771 project will be limited to the 771 stack.	The inclusion of explosives in the DOP is the first step in evaluating the use of explosives on the 771 stack. The RSOP for Facility Disposition indicates that the Site must notify the LRA and stakeholders that explosives may be used as soon as it is proposed in the planning process. The DOP accomplishes that notification and provides the initial details on why explosives are proposed as the demolition method. Additional information on the explosives and particular methodology will be developed as the characterization information is completed and planning continues. A number of options for demolition and controls are being considered and will be discussed at the D&D pizza meetings, as it is available. This section assumes that the stack will meet the unrestricted criteria. If it does not meet the unrestricted release criteria and cannot be decontaminated to meet the unrestricted release criteria, then a separate decision document will need to be prepared to address the decommissioning of the stack.
2	Since 1999, the Coalition has been interested in the Site's concrete recycling program. During the public comment period on the *RSOP for Recycling Concrete*, the Board requested additional monitoring be conducted to ensure the rubble meets the free release criteria. At the time, we also requested DOE take steps to prevent groundwater contamination. Given the Coalition's interest in the Concrete Recycling RSOP, the Board feels that Section 5.5, Waste Minimization and Recycling, needs additional detail on the proposed exception to the RSOP. The Board therefore requests better documentation on how the procedure described on page 54 would benefit the closure project and why it is preferable to other alternatives. In addition, the Board requests more documentation on what the potential impacts of this new procedure on surface water, groundwater, and air quality may be and how these impacts will be mitigated.	The environmental consequences for the proposed exception to the RSOP were assessed, and it was determined that the environmental consequences documented in the RSOP for Recycling Concrete were sufficient. The use of slabs instead of crushed concrete would have less negative impacts to the environment due to reduced handling, reduced dust generation, reduced risk to the worker, and a more stable compacted surface. Additional engineering information will be prepared on this activity to document that the use of slabs will still meet the requirement of providing a surface with a lifetime subsidence of less than 1%. Once this information is available, it will presented at a D&D Pizza Meeting.

Board of Directors of the Rocky Flats Coalition of Local Governments comments on the *771 Closure Project Decommissioning Operations Plan Modification 4 and Proposed Action Memorandum for Under Building Contamination Remediation*		
No.	**Comment**	**Response**
3	The Coalition represents communities downwind of the Site and is concerned about the impacts of the closure project and residual contamination on air quality. The final document should contain more detail on any potential air quality impacts, including how such impacts will be mitigated or eliminated. In addition, given the history of the building and the extent of contamination, the Board requests project-specific air monitoring. On this last point, the Executive Summary states project-specific air monitoring will occur, but this statement is not included in the DOP itself. Given the latitude provided in the Site's Integrated Monitoring Plan for project-specific air monitoring, please explain what specific air monitoring plans the Site anticipates implementing.	Project-specific air monitoring may be conducted during demolition activities, but the monitoring will be conducted in accordance with the Integrated Monitoring Plan (IMP). The IMP is updated annually with input from the stakeholders and LRA. The IMP is a more appropriate place to specify the project-specific monitoring because it is the Site-wide document for monitoring activities; the actual condition of the 771 Project buildings will be known, therefore more appropriate monitoring activities can be selected; and stakeholders and the LRA have the opportunity for input.
4	The Coalition places great emphasis on protecting water quality, particularly surface water quality, as the streams draining the Site flow through our communities. The current draft of the DOP contains insufficient detail on how water quality will be protected during the demolition and remediation project. For instance, the Board understands that portions of 771 are below the water table and additional excavation around the building may be required. Several other of the demolition and remediation activities described in this DOP have groundwater implications, such as the plans to use soils below Tier I action levels as backfill and to abandon the tunnels in place. The final document should address all potential impacts on water quality, including a more thorough discussion of how D&D activities and environmental restoration activities will be integrated. In addition, the Board specifically requests additional information on whether the Site anticipates any potential impacts to groundwater flow as a result of propagation of fractures in the subsurface from the use of explosives. Finally, as discussed more thoroughly below, the DOP must address the long-term stewardship needs necessary to protect water quality after closure.	The DOP is only intended to address activities associated with decommissioning and under building remediation. Groundwater and surface water controls for decommissioning activities are detailed in the RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities and RSOP for Facility Component Removal, which are incorporated in the DOP through reference. Since the under building remediation is proposed to be conducted while the buildings are still standing, there should be no surface water issues associated with that activity. Groundwater controls are discussed in the DOP for under building remediation. If groundwater is encountered, it will be pumped and containerized and managed in accordance with the Incidental Waters Program. The use of explosives and its impacts on the environment were assessed in the RSOP for Facility Disposition. There is also an ER Transition section in the RSOP for Facility Disposition, which addresses the ER/Decommissioning integration. Long-term stewardship issues associated with water quality are not within the scope of the DOP and will be addressed in future documentation once several studies have been completed by ER including the Groundwater Balance Study and the Land Configuration Design Basis.

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Board of Directors of the Rocky Flats Coalition of Local Governments comments on the *771 Closure Project Decommissioning Operations Plan Modification 4 and Proposed Action Memorandum for Under Building Contamination Remediation*		
No.	**Comment**	**Response**
5	The Coalition is looking carefully at the amount of contamination that will remain at Rocky Flats after closure. Towards this end, within reasonable limits, the Board advocates for minimizing the residual contamination at the Site. For these and other reasons, the Board is particularly concerned about aspects of the DOP that relate to UBC. These concerns include both radionuclides and other contaminants such as volatile organic compounds. The Board is concerned about the plan to only remove those soils that exceed current Tier I action levels. Our reasons are as follows: (1) the area has not yet been adequately characterized, (2) the impact to groundwater from residual contamination is uncertain, and (3) the RFCA parties are currently reviewing the Site's soil action levels and these action levels are expected to change from current values. In addition, the Coalition Board has not agreed it is the best alternative to leave foundations in place after closure. We believe this issue needs a more thorough public dialogue. Finally, as this DOP makes clear, this area will not be cleaned to a level that would allow for unrestricted use. Despite this fact, the DOP makes no mention that long-term stewardship requirements were considered in making this decision.	In order to use the RSOP for Facility Disposition for the demolition activities associated with the 771 Closure Project, the facilities must be decontaminated to meet the unrestricted release criteria. The RSOP for Facility Disposition also established the criteria for leaving portions of a facility three feet below the final proposed grade, which includes the requirement to meet the unrestricted release criteria. Characterization activities of the under building area are currently being planned and will be executed in two phases. This first phase will indicate the general extent of the contamination under the building so that a determination can be made on whether the contamination can be removed while maintaining the structural integrity of the building. The second phase of the characterization will indicate the details and boundaries of the contamination. This characterization effort has been discussed at the D&D pizza meetings, and as results are obtained, the results will be discussed at future D&D pizza meetings. The overall industrial strategy for soil remediation is currently being developed. Although the DOP activities may be complete or initiated prior to the strategy being completed, the under building remediation activities for the 771 Closure Project will be assessed against the overall industrial strategy and additional remediation efforts will be undertaken, if necessary.

Board of Directors of the Rocky Flats Coalition of Local Governments comments on the *771 Closure Project Decommissioning Operations Plan Modification 4 and Proposed Action Memorandum for Under Building Contamination Remediation*		
No.	**Comment**	**Response**
6	The Coalition believes long-term stewardship needs and obligations must be integrated into the remedy selection process. Only by considering these needs will the Site ensure that the cleanup achieves our shared goal of reducing the near-term and long-term risks and uncertainties. Yet, while the DOP states one objective is to ensure long-term protection, there is no discussion of the steps that will have to be taken and controls implemented to achieve this goal. It is clear from reading the DOP that there will be long-term risks due to residual contamination that will require on-going management long after Rocky Flats is closed. Many specific long-term stewardship requirements, including maintenance of physical and institutional controls and records management, will flow directly from the cleanup actions that are defined by this DOP. These obligations in part include monitoring, maintaining and eventually replacing engineered barriers; developing and enforcing other physical controls to ensure no one digs up contaminated soils; monitoring water quality; and developing and maintaining institutional (legal) controls to ensure that contamination pathways are not created by human activity. The Coalition believes long-term stewardship issues and obligations must be explicitly addressed when evaluating each remedial alternative and implementing a final remedy. DOE and EPA regulations and guidance demand such an integrated approach to remedy selection. The failure to adopt such an approach raises serious questions about the long-term effectiveness of a given remedy. In addition, the alternatives analysis that underpins the plan's objectives is incomplete. The plan presumes there are only three options – D&D, no action, or reuse. However, under D&D there are various alternatives that the Site should consider. These options include removing all subsurface structures, conducting additional soil remediation, developing and implementing additional groundwater protections, excavating to more than three feet below grade, and cleaning up to a level and in a manner that would obviate the need for permanent access restrictions. The Coalition therefore requests the alternatives analysis be expanded to include other D&D options, and that each alternative include a thorough stewardship analysis.	Long-term stewardship is not within the scope of the DOP and will be addressed in future documentation once several studies have been completed by ER including the Groundwater Balance Study and the Land Configuration Design Basis. Since these studies are not complete, there is some risk in conducting these decommissioning and remediation activities. There is a possibility that some of the work may need to be modified in order to meet the long-term stewardship requirements. At this time, it is anticipated that this risk is low, which is why the activities are being proposed. As the long-term stewardship process progresses, the 771 Closure Project will continue to evaluate the decommissioning and remediation activities proposed in the DOP to ensure that the Project activities are consistent with long-term stewardship objectives, and adjustments will be made, as necessary.

Comments from the Colorado Department of Public Health and Environment on the Building 771 Closure Project Decommissioning Operations Plan Modification 4 and Proposed Action Memorandum for Under Building Contamination Remediation dated October 31, 2000		
No.	**Comment**	**Response**
Unfortunately, it appears that an old version of the DOP was reviewed by CDPHE. The 14-day pre-public version was initiated by CDPHE on November 6, 2000. During the 14-days, several changes were made to the DOP. Specifically, the technical section was rearranged. Prior to submitting the DOP for formal public comment, the changes were discussed with the CDPHE 771 representative, and the new version was distributed to the public, CDPHE and EPA. Unfortunately, the documents had the same cover date, which probably lead to the confusion. Some of the comments made by CDPHE do not apply as the public version already addressed the issue.		
1	Executive Summary Remove the sentence "This modification satisfies the notification requirements of the RSOPs (throughout the document, but particularly in Section 5.4, and 5.5).	The DOP does supply the necessary information for notification for the use of the RSOP. An additional notification given the detail in the DOP seems needless. An annual update will be provided to the LRA and stakeholders through the D&D Pizza Meeting. The update will include progress over the previous year, proposed activities for the coming year, and an update of RFCA decision document status, including the implementation of the RSOPs. Additionally, periodic updates will be given on specific activities through project meetings.
2	Section 4 The parties to RFCA are in the process of negotiating a final list. Section 4 will be modified, as appropriate, when they reach agreement on the final list.	Since the DOP uses the ARARs in the RSOP, there is no reason to modify the DOP. Footnote 15 of the version reviewed and Footnote 29 of the public version intends to address this issue.
3	Section 4.1.1.2 Section should describe current uncertainty on radionuclide cleanup standards and not list them as if agreed to by all parties.	A footnote was added to the table indicating that the soil action levels are currently being negotiated.
4	Section 5 Change the sentences in the first paragraph to "In such cases, planned activities may be revised without revising the CPB or DOP, if the activities are still within the scope of this DOP and the referenced RSOPs *consistent with RFCA and the DPP. Notable* changes will be shared with the LRA and stakeholders as part of the RFCA consultative process."	The words "consistent with RFCA and the DPP" were added to the text as requested. However, the term notable was not substituted for significant.
5	Section 5.2.2 Cites completion of a RLCR for 771. DOP should not; the RLCR does not meet current standards from the applicable RSOP, being based on historical knowledge only.	The RLCR was completed in August 1998. However, the follow-on sentences indicate that this RLCR was based on historical and process knowledge and that the RLCR is being amended and submitted for concurrence. The footnote also indicates that this amendment will require LRA concurrence.
6	Section 5.3.2 Remove the sentence "Some miscellaneous equipment may remain in the Areas after decontamination, component removal, and size reduction because it meets the unrestricted release criteria, and there is no reason to remove it." This interferes with the ability to perform a good final survey. Walls and floors must be bare to do a good survey of the building shell.	If equipment or items are in the way of a pre-demolition survey, it will be removed to ensure that adequate access is available.

Comments from the Colorado Department of Public Health and Environment on the Building 771 Closure Project Decommissioning Operations Plan Modification 4 and Proposed Action Memorandum for Under Building Contamination Remediation dated October 31, 2000		
No.	**Comment**	**Response**
7	Section 5.4.2, Area AG, Tunnels and Stack This section will not be approved because enough information on water balance is not available yet.	If the tunnel(s) will negatively impact groundwater, or depth to the top of the tunnel(s) changes due to final contours, backfill, and/or covers, or contamination requiring remediation is found below the tunnel(s); then the tunnel(s) will be removed. If the Sitewide Groundwater Balance Study, Land Configuration Basis Design, and/or ER characterization results change the tunnel disposition from that indicated in the DOP; then the consultative process will be used to determine the appropriate disposition method.
8	Section 5.4.4 Include the following requirement: "A readiness assessment will be required before D&D of the infinity room and state representatives will be participants in the RA."	The DOP is not the appropriate forum to require a readiness assessment. Readiness assessments will be conducted in accordance with the Readiness Assessment Program as indicated in the RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities, which is incorporated into the DOP through reference. The LRA is always welcome to participate in readiness assessment activities.
9	Section 5.5 Move the second paragraph, beginning "The demolition phase..." to the beginning of the section. Change the sentence in the (now second) paragraph to "The actual sequence and methods used may differ from what is indicated in this section; as *long* as the activity is within the scope of the *RSOP for Facility Disposition and consistent with the RFCA and the DPP*, there will be no modification to the DOP."	Changes were made as requested.
10	Section 5.5.1.8 Final surveys cannot be done on the building shell until the UBC is gone. Address how the interior building shell will be protected from remaining in-ground contamination during demolition.	The public version of the DOP indicates that the PDS will be conducted after under building contamination remediation.
11	Section 5.5.1.8 State how this will not interfere with environmental characterization and how much plutonium may be missed and left in the ground due an inadequate characterization	The initial planning of the decommissioning and remediation activities indicates that this is a viable process for demolition and that the demolition will not interfere with ER characterization. Additional detailed planning will be conducted, which the LRA is welcome to participate in.

Comments from the Colorado Department of Public Health and Environment on the Building 771 Closure Project Decommissioning Operations Plan Modification 4 and Proposed Action Memorandum for Under Building Contamination Remediation dated October 31, 2000		
No.	**Comment**	**Response**
12	Section 5.5.2 This section will not be approved because the stack is not clean.	The inclusion of explosives in the DOP is the first step in evaluating the use of explosives on the 771 stack. The RSOP for Facility Disposition indicates that the Site must notify the LRA and stakeholders that explosives may be used as soon as it is proposed in the planning process. The DOP accomplishes that notification and provides the initial details on why explosives are proposed as the demolition method. Additional information on the explosives and particular methodology will be developed as the characterization information is completed and planning continues. A number of options for demolition and controls are being considered and will be discussed at the D&D pizza meetings, as it is available. The inclusion of the use of explosives on the 771 stack assumes that the stack will meet the unrestricted criteria. If it does not meet the unrestricted release criteria and cannot be decontaminated to meet the unrestricted release criteria, then a modification to the DOP or separate RFCA decision document will need to be prepared to address the decommissioning of the stack. The process to meet the unrestricted release criteria is as follows: **Reconnaissance Level Characterization (RLC)** Project personnel are currently conducting the RLC for the stack. As characterization information is obtained, additional measurements and samples will be taken. The location, depth, and type of contamination found will determine the location and number of measurements and samples. If it is necessary to take measurements at higher elevations in the stack, samples could be taken using scaffolding, cranes using man-cages, and/or in-situ measurement devices. Decontamination Areas identified that exceed that unrestricted release criteria will require decontamination. The decontamination method will be consistent with those described in the RSOP for Component Removal, Size Reduction and Decontamination Activities. If the lower areas of the stack are contaminated, standard mechanical techniques can be used (i.e. scabbling, hydrolasing, etc.). If contamination exists at higher elevations, other techniques could be used such as wall crawlers (uses scabbling, shot blast and water), structural scarifying machines, and/or the "hot spot" could be removed. Once decontamination is completed, the Pre-Demolition Survey (PDS) will be performed. **PDS** The extent of the PDS will be determined by the amount of contamination found. The techniques to perform the PDS will be similar to those described above in the RLC. Details on the PDS can be found in Section 4.6 of this document. Once the PDS is complete, a report will be written, which will include this data. DOE and the LRA will review and approve the data to ensure the stack meets the unrestricted release criteria.

Comments from the Colorado Department of Public Health and Environment on the Building 771 Closure Project Decommissioning Operations Plan Modification 4 and Proposed Action Memorandum for Under Building Contamination Remediation dated October 31, 2000		
No.	**Comment**	**Response**
13	Section 5.5.3 This section will not be approved because not enough information is yet known about water balance.	If the tunnel(s) will negatively impact groundwater, or depth to the top of the tunnel(s) changes due to final contours, backfill, and/or covers, or contamination requiring remediation is found below the tunnel(s); then the tunnel(s) will be removed. If the Sitewide Groundwater Balance Study, Land Configuration Basis Design, and/or ER characterization results change the tunnel disposition from that indicated in the DOP; then the consultative process will be used to determine the appropriate disposition method.
14	Section 5.6 While it is commendable to create a tie-in between ER and D&D activities, not enough information is available to approve this section as a PAM	This section contains generally the same level of detail as previously approved PAMs.
15	Section 5.6 The third sentence of the first paragraph of Section 5.6 states that this DOP/PAM addresses the process waste lines under the referenced buildings. This conflicts with the next sentence, which says that IHSSs (e.g., IHSS 121) will not be part of the scope. The second paragraph in this section states that the original process waste lines (IHSS 121) will not be included in this action.	The statements do not conflict. The first paragraph indicates that the old process waste line will be removed from underneath the building footprint. The second paragraph indicates that the RCRA closure of the old process waste line will be conducted under a separate RFCA decision document or RCRA Closure Description Document. The distinction between the two activities is made to clarify the scope of the DOP.
16	Section 5.6.1 The version reviewed has added Building 771C to the 3 other buildings covered by this DOP. This building should therefore be added to the last paragraph of Section 5.6 and addressed throughout the remaining sections. The total number of buildings should be rased to 4 in the second paragraph of Section 5.6. Alternatively, the first paragraph of Section 5.6 could explain that since this is a small addition to Building 771, all discussions of Building 771 will be assumed to cover Building 771C issues as well.	The changes were made as requested.
17	Section 5.6.1 In the latest version, two sentences have been added to the second paragraph of Section 5.6.1. These limits to removal actions may be reasonable to consider, but as stated they allow broad latitude for restricting remediation. PAMs or other interim remedial action decision document typically include sections on alternatives evaluation/alternatives analysis, environmental evaluation, performance monitoring and air monitoring in addition to the subjects covered by this DOP. These are suggestions for future documents.	The last two sentences simply indicate that the soils will be appropriately dispositioned offsite and that groundwater contamination will be addressed in a separate remedial action. These sentences are meant to bound the DOP scope, not limit the under building contamination remediation activities. Text will be added on performance monitoring and on how the excavation alternative was selected.

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18	Section 5.6.3 The second paragraph in Section 5.6.3 is probably more appropriate in Section 5.6.2. This discussion should also consider post-remediation conditions that may affect groundwater/containment flow such as rubble-filled basements/excavations, removal of footing drains, etc. Contrary to the third paragraph in Section 5.6.3, the draft IA SAP identifies potential COCs as "all analytes detected during previous studies in the IA and generally include the following analytical suites: Target Compound list (organics), Target Analyte List, radionuclides (RFETS-specific)." This long list can be refined using "site-specific analytical data and process knowledge." The list in Table 6 is presumptively short. It should include metals (see Section 3.1) and chemicals (and their degradation products) known to have been used at these buildings. The footnote at the bottom of Table 6 refers to the use of hypothetical values derived by using the sum-of-ratios method. To be complete, the footnote needs to add, "...in a Am-241/Pu-239 activity ratio of 0.18."	The potential COCs developed as part of the IASAP Addendum for the 771 Closure Project (in preparation) will be added to the text. These potential COCs will be refined by the information gathered using the IASAP Addendum for this area that is now in preparation. The addition to the footnote was made.
19	Section 5.6.3 The paragraph after Table 6 states an expectation that only Am and Pu will be found to be COCs at Building 770. This statement appears to conflict with Section 5.6.4.1, which anticipates VOCs as well.	The paragraph in question relates to radiological contamination and to a specific spill. The word radionuclide will be added in front of COCs to clarify this paragraph..
20	Section 5.6.4 The first paragraph in Section 5.6.4 mentions that concrete slabs will be "appropriately dispositioned." If the disposition of these slabs will be purview of ER, then considerably more detail needs to be added to describe how they will be "appropriately dispositioned."	Slab removal will be conducted by decommissioning. This will be clarified in the text. This paragraph established the process that will be used, and the status of the area prior to initiating remediation. Throughout the DOP, it is apparent that building structure will be managed by decommissioning, while soil remediation will be managed by ER. However, it is anticipated that both work activities will be completed by the same subcontractor; therefore, there will be no transition, and the activities will be seamless with oversight from both decommissioning and environmental restoration.
21	Section 5.6.4.2 Most of the text of Section 5.6.4.2 seems more appropriate to include in Section 5.6.4.4. Section 5.6.4.3 could be re-titled, "Proposed Action."	The titles appropriately indicate the subjects the follow.

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22	Section 5.6.4.3 The fourth paragraph in Section 5.6.4.3 describes verification sampling/surveying, a topic that should warrant more detail and its own subsection. This paragraph should mention the sampling location and frequency, or state that these will be based on guidance in the IASAP. The referenced table should be Table 6. The final sentence in this paragraph (and Section 5.6.4.1) needs to be carefully considered. RFCA states that for interim remedial actions, interim cleanup levels will equal Tier I action levels. Prior ER projects that have been guided by these levels are in locations that would allow them to be re-addressed should the final Comprehensive Risk Assessment and CAD/ROD require it. UBC removals, however, must be considered more final and therefore, care must be taken to ensure that actions based on the upper limit of the CERCLA risk range are protective.	The verification samples and surveys required to verify completion of remedial actions will be based on the size of the excavation and the nature of the contaminants. Therefore, it is not possible to include this information at this time. However, this paragraph will be expanded to include that, as noted, the survey and sample location and frequency will be based on the guidance provided in the IASAP. The referenced table appears to be correctly numbered as Table 5. The Tier 1 values were calculated as protective. When the nature and extent of contamination is determined for the UBC, the Project may choose to remove additional soils below Tier 1 values at that time if they determine that additional soil removal will better protect surface water and the environment. No other exposure pathways exist assuming a wildlife refuge or open space land use.
23	Section 5.6.4.4 The third paragraph of Section 5.6.4.4 does not sufficiently explain how soils with contamination levels between Tier I and Tier II will be "evaluated for return to the excavation." RFCA states that, "put-back levels decisions should be made and explained within the decision documents associated with those actions." This is beyond the scope of this DOP.	The following text will be added: Where possible, soils below Tier 1 values will not be removed from the excavation. Soils below Tier 1 and above Tier 2 values that are removed will be evaluated for potential return to the excavation using the criteria of protecting human health and surface water. This evaluation will be made with the LRA concurrence.
24	Section 5.6.6 The first sentence of Section 5.6.6 does not account for the evaluation of soils between Tier I and Tier II mentioned in the third paragraph of Section 5.6.4.4. This section should clarify and explain the statement in Section 5.6.4.2 that soils destined for off-site disposal "will be placed into appropriate waste containers." The waste management by the Materials Stewardship Project must be sufficient to cover RCRA waste management issues. While a specific schedule calendar is not necessary, and estimate of the duration of important elements of the UBC portion of this project is.	This section will be clarified as stated in the response to Section 5.6.4.4 and the following text will be added: The specific waste containers and storage areas will be compliant with RCRA. However, the determination of the waste containers and appropriate temporary storage areas will be made after pre-remedial characterization is complete. Insufficient information exists at this time to make the determination. The duration of the UBC remediation is dependent on the volume of soil requiring a remedial action. This information is not available at this time.

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Many of the Broomfield comments on the 771 Closure Project Decommissioning Operations Plan (DOP) Modification 4 and Proposed Action Memorandum (PAM) for Under Building Contamination (UBC) Remediation are questions or requests for information. In many cases, the scope of the information is inappropriate for the DOP modification. As a result, these questions were not answered in the responsiveness summary and changes were not made to the DOP modification. Two meetings (November 30, 2000 and January 9, 2001) were held with the Broomfield representative to answer these questions, and should additional information be requested, it will be provided at that time.		
1	Page 2, Table 1. 771 Closure Project Facilities. 775, the sewage lift station is identified as a Type 1 facility on the table. This facility could be Type 2 facility because of the history associated with contaminated water being released from controlled areas within the 771 Building.	The DOP does not dictate the typing of a facility. Typing is specified in the Reconnaissance Level Characterization Report, which has been recently modified to indicate that Building 775 is a type 2 facility. The DOP has been modified to be consistent with the RLCR.
2	Page 9, 2.1 Project Team Organization Structure. There appears to be a conflict when RCRA inspectors report to the Operations Manager and associated regulatory compliance activities are reported to the Operations Manager rather than the Compliance Manager.	This section provides a brief description of the 771 Closure Project organization structure, functions, and interfaces as they pertain to facility management and decommissioning. The organizational structure is not an enforceable part of the DOP. The information requested is too detailed for the DOP modification.
3	Page 10, Figure 2. 771 Closure Project Organization. Why does the project require two D&D Project Managers?	This section provides a brief description of the 771 Closure Project organization structure, functions, and interfaces as they pertain to facility management and decommissioning. The organizational structure is not an enforceable part of the DOP. The information requested is too detailed for the DOP modification.
4	Page 17, 3.1.2 Physical Interfaces. Define the interface between Building 771 personnel and Building 776 personnel when the tunnel is being remediated.	The tunnel will be dispositioned by the 771 Closure Project. Prior to initiating decommissioning activities, a barrier will be placed at the 776 opening to control the work area and prevent cross contamination.
5	Page 20, 4.3 Dismantlement Sets and Decommissioning Areas. Broomfield is concerned with the concept of having only Building Trades working in Areas with removable contamination less than 2,000 dpm without the support of Steelworkers, which have the process knowledge of the facility and known hazards associated with dismantlement of equipment. Clarify the need to distinguish between a dismantlement work set and a decommissioning area. All steps must be taken to protect the workers from potential situations that could lead to a plutonium uptake.	The distinction between sets and areas is made for work scope clarification and is based on the Project Labor Agreement. Work activities will be planned and executed in accordance with the RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities, which is incorporated into the DOP through reference.

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6	Page 24, Table 4. Area Descriptions, Area AF. Clarify if the floors in rooms 114, 141, and 149 will be scabbled, or will they be packaged as low-level or transuranic waste? It may be impossible to decontaminate the floors in 141 and sections of the floors in rooms 114 and 149.	As indicated on page 25 of the DOP, Statements are made throughout the DOP on what type of waste an activity will create. These statements are based on process knowledge and included for information purposes. A cost benefit analysis will be conducted to determine if the materials can/should be decontaminated or if it should be disposed of as waste.
7	Page 27, 4.4.2 Decontamination, ¶ 5. The document states "floor areas requiring the removal of contaminants exhibiting penetration of less than one inch will be mechanically scabbled to remove contamination". However, surface cracks in the floor slabs will be decontaminated with "crack chaser" scabbling equipment. Please define the process of using crack chaser. How will the airborne contamination be controlled?	Work activities will be planned, executed, and controlled in accordance with the RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities, which is incorporated into the DOP through reference.
8	Page 27, 4.4.2 Decontamination, ¶10. Asbestos-containing material (ACM) in the roofs will be removed prior to demolition, but there is no mention of radioactive contaminants in the roofs. How will contaminated roofs be remediated? What controls are in place to ensure there are no releases to the environment?	If the roof is contaminated, it will be removed as a contaminated component or decontaminated in accordance with the RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities, which is incorporated into the DOP through reference and also specifies the controls for these activities.
9	Page 29, 4.4.4 Room 141, 2nd bullet Change the sentence to read: Removed floor sections will be surveyed and released *if the sections meet the free release criteria.*	The word released has been changed to dispositioned.
10	Page 29, 4.4.4 Room 141, 3rd bullet ACM may be a factor to consider when removing the downspout for the stromsewer drain system and the riser section of the system which could disturb the roof.	The bullets are meant to detail the general sequence of Room 141 decommissioning, and is not intended to address every activity or contingencies. Work activities will be planned, executed, and controlled in accordance with the RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities, which is incorporated into the DOP through reference.
11	Page 29, 4.4.4 Room 141, 8th bullet. Contaminated concrete in 3 feet by 3 feet sections will be cracked prior to disposal. Define how the concrete will be cracked. Will the concrete be cracked in room 141? If temporary HEPA ventilation is used during this process, what procedure is in place to ensure the filters are changed out on a regular basis and do not become plugged? Once the ceiling is removed a temporary ceiling cover will be installed. What type of cover will be used and how will the integrity of the ceiling be measured?	Work activities will be planned, executed, and controlled in accordance with the RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities, which is incorporated into the DOP through reference. As the detailed planning is conducted, it will be shared with those interested as requested. The information requested is too detailed for the DOP modification.

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12	Page 30, 4.4.4 Room 141, 1st bullet See # 11, first statement. The document states concrete from the upper walls will be packaged as LLW, how is this determination made at this point without characterization of the room?	As indicated on page 25 of the DOP, Statements are made throughout the DOP on what type of waste an activity will create. These statements are based on process knowledge and included for information purposes. All waste will be characterized and packaged in accordance with Site Waste Management Programs.
13	Page 30, 4.4.4 Room 141, 2nd bullet Describe the process when the contaminated floor is being removed and the controls that will be in place to prevent additional migration of contaminants to the soil. What does the decision tree process reflect when soil is contaminated? Will the soil be remediated at this point and will the project chase the contamination in the soils?	Concrete will stay in place until remediation activities are initiated at which point the concrete with be removed and the remediation will be initiated. Based on the results during remediation activities, additional floor may be removed.
14	Page 30, 4.4.4. Room 141 What are the plans for controlling groundwater within this area? How and where will the heavy equipment used inside the room be decontaminated?	Groundwater and surface water controls for decommissioning activities are detailed in the RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities and RSOP for Facility Component Removal, which are incorporated through reference. Since the under building remediation is proposed to be conducted while the buildings are still standing, there should be no surface water issues associated with that activity. Groundwater controls are discussed in the DOP for under building remediation. If groundwater is encountered, it will be pumped and containerized and managed in accordance with the Incidental Waters Program. Heavy equipment will be decontaminated at the Project or in one of the two decontamination pads on-Site.
15	Page 30, 4.5 Environmental Restoration The document states UBC will be remediated, but original process waste lines will be dispositioned when Individual Hazardous Substance Site (IHSS) 121 remediation occurs. Foundation drains will also be addressed when IHSSs associated with the 771 Closure Project take place and the document does not address potential new water pathways that may be generated during the UBC remediation process. Define the process if there are elevated levels of contamination around or in the process lines or foundation drains. The DOP states "drains will be interrupted and backfilled or otherwise blocked to prevent a conduit to the drainage". Clarify if the drains are free-released or contaminated prior to backfilling or being blocked.	The Original Process Waste Lines (OPWL) (IHSS 121) are found in and under buildings as well as associated with the main OPWL system. The OPWL not associated with buildings will be dispositioned during remediation of IHSS 121. The OPWL associated with UBCs will be remediated with the UBCs. Other OPWL associated with buildings will be flushed during decommissioning (as detailed in the Facility Disposition RSOP). Foundation drains will be investigated when the UBC is investigated. Foundation drains in areas with UBC above Tier 1 action levels will be removed with the UBC. While various remedial actions will take place, the actions will all be tracked, and the IHSS closed out when all actions are completed.

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16	Page 31, 4.5.1 Project Description. The DOP states source removal will remediate soils to the extent practicable. At what point will all the source removal take place for soils above Tier 1? The second paragraph states, "groundwater contamination will not be addressed as part of this remedial action", but the City strongly believes groundwater management is a key component associated with the 771 UBC remedy. The document does not identify any scenarios associated with the removal of UBC and encountering groundwater.	The remedial action is to perform source removal of contaminated soils under the buildings that are above Tier 1 soil action levels. The extent of the remedial action will be determined based on characterization activities that will be defined in the IASAP. Soil remediation will be stopped if worker health and safety issues arise due to the building instability. ER work will then resume after the building is demolished. Groundwater remediation will be addressed as a separate remedial action for the entire plume in this area.
17	Page 32, Table 5. Potential Contaminants of Concern and Clean-up Target Levels. Table 5 identifies five contaminants of concern (COC) and does not identify freon as a COC. Freon was used routinely within the building. Define how the COCs are identified for 771 to determine if adequate characterization is performed. The Industrial Area (IA) Sampling and Analysis Plan (SAP) is generic to characterization within the IA and is not specific to Building 771. Is there a routine generic list of analytes to determine the presence or absence of contaminants during the first phase of sampling?	While Freon was used in the building as noted, this is an inert gas and releases are not expected to have penetrated the concrete slab or contaminated the soil. The DOP will now list the potential COCs developed as part of the IASAP Addendum (in progress) for characterization of the closure project.
18	Page 32, 4.5.4 Project Approach, ¶2 The document states: "contaminated soil and process waste lines associated with the UBC will be excavated and dispositioned, as appropriate". Define appropriate, does this mean stockpiled, packaged, or transported to a staging area? The document defines how process waste lines not associated with UBC will be grouted or foamed in place to eliminate potential pathways. What is the long-term impact to Environmental Restoration (ER) when the grouted or foamed lines are removed? Will this be creating a Department of Transportation (DOT) issue or a waste issue?	Text in Section 4.5.4.4, first paragraph, states that excavated soils and debris will be placed directly into the appropriate waste containers where possible. However, temporary staging areas for the excavated soil and debris may be used if necessary. The OPWL not associated with UBC will be investigated and remediated separately and is not within the scope of the DOP modification. OPWL that are foamed or grouted will not be removed. There will not be ER or DOT issues with these.
19	Page 32, 4.5.4 Project Approach, ¶ 2. The UBC project will be conducted in accordance with Site ER policies and procedures. Define the procedures associated with UBC remediation.	The specific ER policies and procedures are determined during preparation of the appropriate field documents for implementing the decision document.

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21	Page 33, 4.5.4.3 Excavation, ¶ 1. To prevent the release of airborne contamination, contaminated soils and debris should always be placed directly into waste containers. Stockpiling waste material also creates physical hazards and reduces the work area which could lend itself to increased accidents with all the heavy equipment and workers in the area.	As noted, it is preferred to place contaminated soils and debris directly into containers. As the text in Section 4.5.4.4 states soils and debris will be placed directly into the appropriate waste containers where possible. However, temporary staging areas for the excavated soil and debris may be used if necessary. This allows the Site the flexibility to stage materials if necessary, although it wouldn't be the first choice.
23	Page 33, 4.5.4.3 Excavation, ¶ 4. The City of Broomfield will not allow "only surveys" to be taken to verify remediation of UBC. Change the second sentence to read: At the completion of excavation, samples and surveys will be taken along the base and sides of the excavation, to verify the completion of the remedial action.	Section 4.5.4.3 of the DOP states that "At the completion of excavation, samples and/or surveys will be taken along the base and sides of the excavation, to verify the completion of the remedial action." This statement was meant to indicate that samples along with surveys would be used to verify completion. The "/or" will be removed.
24	Page 33, 4.5.4.3 Excavation, ¶ 4. Table 5 is not inclusive of all COCs. See # 17.	The table lists the expected potential COCs. This list will be better defined by the IASAP Addendum for characterization of this Project.
25	Page 33, 4.5.4.3 Excavation, ¶ 5. Why is the assumption made that most of the compounds have not migrated due to the compounds being insoluble in nature? Most organics are soluble and do migrate, thus making the scenario of contaminated media more complicated.	The section will be clarified to conform to the text in Section 4.5.3, Data Summary.

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26	Page 34, 4.5.4.3 Excavation, ¶ 3. If dewatering of the excavation is required, the water will be sampled and managed as per the Site's Incidental Water Program. The 771 DOP should be more specific for water management issues. Information is available regarding the plumes within the area and should be incorporated into the document. What is the procedural process to ensure sumps are not cross-contaminated? Define the process for decontamination of the pumps and the disposition of the rinsate associated with the decontamination process.	While the DOP strives to address all potential situations, it is beyond the scope of the document to address every possible scenario. As with many other Site documents, reference is made to established procedures that the Site employs, many of which have already gone through regulatory and public review. The management of water is clearly one such area. The Incidental Water Program has been in place for several decades, revised through the years as conditions changed and to match the new mission of the Site. Sampling and disposition of incidental waters is conducted per Site procedure 1-C91-EPR-SW.01, Control and Disposition of Incidental Waters. The use of standardized procedures, such as this program or the more recent RSOPs establishes the Site's management practices, which need not be repeated in documents like the 771 DOP, but merely referenced as they are in this case. There is a VOC plume in the area immediately south of B771. However, it is not known if the plume extends under the building. Evidence suggests that the building foundation drains are diverting groundwater flow away from the building, possibly limiting the spread of this plume. The slab is expected to be underlain by a few inches of gravel. Because of this, it is anticipated that the groundwater contamination (if present) is somewhat uniform. Individual temporary sumps will be installed where required in each excavation. Because the excavations will be in areas of contaminated soils, the pumps are expected to be handling contaminated groundwater. The contaminants are expected to be similar, and treatment units will be chosen that can handle them. Therefore, a thorough decontamination of pumps between excavations will not be required.
28	Page 34, 4.5.4.4 Staging of Excavated Soil. Soils above Tier 2 levels but below Tier 1 levels will be appropriately managed and evaluated for return to the excavation based on what procedure? What are the criteria for the evaluation and are the regulators involved with the decision to return the soils to the excavation? The City of Broomfield is concerned the process for the evaluation is not clearly defined and we requests more dialogue with the stakeholders to address this subject. Broomfield requests more information regarding the policies and procedures associated with this remediation activity.	Where possible, soils below Tier 1 values will not be removed from the excavation. Soils below Tier 2 values that are removed will be evaluated for potential return to the excavation with the criteria of protecting human health and surface water. This evaluation is made with the Agencies concurrence.

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33	Page 36, 4.6. Pre-Demolition Survey, ¶ 2 Data required to meet PDS objectives include total surface contamination measurements, removable surface contamination measurements, and scan data, yet surface media sampling will only be required on a limited basis. Given the fact that concrete will be used as backfill, why is surface media sampling required on a limited basis? How is the decision made to determine how and when media sampling will occur? Identify the procedure or process related to the surface media sampling criteria.	Pre-demolition survey activities are conducted in accordance with an activity-specific pre-demolition survey package prepared in accordance with the Site-Wide Pre-Demolition Survey Plan. The pre-demolition survey package outlines the number and type of samples that will be taken based on the area and its historical use and potential impacts. Section 4.6 of the DOP was included for information and to outline the pre-demolition survey activities for the 771 Closure Project.
34	Page 36, 4.6 Pre-Demolition Survey, ¶ 5. The process of sampling non-radiological contaminants is not clearly within this document. Broomfield is worried that there is not a clear method to sample non-radiological contaminants and verify all the contaminants have been removed prior to demolition. How are surveys performed for the verification process? How is beryllium measured or other contaminants during the RLC phase and PDS phase?	Pre-demolition survey activities are conducted in accordance with an activity-specific pre-demolition survey package prepared in accordance with the Site-Wide Pre-Demolition Survey Plan. The pre-demolition survey package outlines the number and type of samples that will be taken based on the area and its historical use and potential impacts. Section 4.6 of the DOP was included for information and to outline the pre-demolition survey activities for the 771 Closure Project.
35	Page 36, 4.6 Pre-Demolition Survey, ¶ 5. The 771 DOP states in limited cases, non-radiological characterization may be required during the PDS phase. For the 771/774 roofs, why can't characterization be performed during the RLC phase? This section of the DOP should address chemical constituents associated with RCRA regulated units. PCBs should also be mentioned as a non-radiological contaminant, which is associated with the facility. Based on information associated with the facility, the non-radiological contaminants should be identified within the document to reflect the scope of the project.	Pre-demolition survey activities are conducted in accordance with an activity-specific pre-demolition survey package prepared in accordance with the Site-Wide Pre-Demolition Survey Plan. The pre-demolition survey package outlines the number and type of samples that will be taken based on the area and its historical use and potential impacts. Section 4.6 of the DOP was included for information and to outline the pre-demolition survey activities for the 771 Closure Project.
37	Page 36, 4.6 Pre-Demolition Survey, ¶ 7. To be consistent with the 707 DOP, the % of IV should not be identified within the document. Remove the % for the IV. The % of IV performed will be determined on a case-by-case basis by the regulators or the subcontractor	The DOP does not specify a percentage for the independent verification.

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40	Page 38, Figure 4. Demolition Activities and ER Interface. The figure needs to clarify the PDS for Building 774 will be conducted after remediation of the foundation and UBC has been completed. The DOP does not address the specific details for the removal of the underground storage tanks (USTs). Add a section to provide more details associated with the USTs and the demolition/disposal sequence within the document.	The figure has been removed. The underground storage tanks are not within the scope of the DOP.
41	Page 39, 4.7.1.3 Site Preparation. How will areas immediately adjacent to planned demolition activities be controlled? The document states ER will control the areas, but does not identify how they will be controlled. ER's activities to control these areas are within the scope of this document because of the association with the 771 demolition activities and the potential to impact the environment	The 771 Closure Project Area will have temporary erosion and sediment control features established as indicated in the RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities. The areas adjacent to the closure project will not be disturbed and will be addressed by ER during the remediation of the industrial area. The remediation and control of the IHSS outside the facility footprint are not within the scope of the DOP.
42	Page 40, 4.7.1.5 Demolition of Outbuildings, ¶ 2. A section needs to be added to the document to address USTs. Did the tow former diesel/fuel tanks go through closure? Will these tanks be left in place? What is the plan for remediation if the soil is contaminated in the area of the fuel tanks? What did the 3 USTs, beneath Building 716 contain? What plans or procedures are in place for the removal of these tanks and their final disposition?	The underground storage tanks are not within the scope of the DOP.
43	Page 40, 4.7.1.6, Demolition of structures and Appurtenances Specific to Buildign771 and Building 774. If soil is to be removed on the east, west, and south walls of Building 771 to an elevation approximately coincident with the second floor framing/slab, how will erosion controls measures be implemented to prevent vertical migration of water? The DOP states the objective of the soil removal and demolition is to leave the area in a safe configuration until the site is backfilled during site restoration. The purpose of the 771 DOP is to recognize specific activities associated with decommissioning operations of 771 and their potential impact to human health and the environment.	Groundwater and surface water controls for decommissioning activities are detailed in the RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities and RSOP for Facility Component Removal, which are incorporated through reference. Since the under building remediation is proposed to be conducted while the buildings are still standing, there should be no surface water issues associated with that activity. Groundwater controls are discussed in the DOP for under building remediation. If groundwater is encountered, it will be pumped and containerized and managed in accordance with the Incidental Waters Program. The human health and environment impacts associated with the soil removal were addressed in the DOP for the under building remediation activities.

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44	Page 43, 4.7.2 Demolition of the Stack Broomfield emphasizes its' concern with the use of explosives at the Site. Until we receive more information regarding the use of explosives at the Site, Broomfield will strongly object to any use of explosives during a demolition project. The 771 DOP does offer more detail than any previous D&D document regarding explosives. We do however have some additional questions. • Does any of the area in which the trench/soil berm is to be located, reside in an IHSS? • Will the 15 feet wide by 5 feet deep trench meet OSHA shoring or sloping standards? • Will the entire stack be surveyed and free-released prior to dropping the stack? • Why will the berms be constructed of loose lifts of soil material instead of compacted material? With the dropping of the stack, loose material will generate more fugitive dust than compacted material.	The inclusion of explosives in the DOP is the first step in evaluating the use of explosives on the 771 stack. The RSOP for Facility Disposition indicates that the Site must notify the LRA and stakeholders that explosives may be used as soon as it is proposed in the planning process. The DOP accomplishes that notification and provides the initial details on why explosives are proposed as the demolition method. Additional information on the explosives and particular methodology will be developed as the characterization information is completed and planning continues. A number of options for demolition and controls are being considered and will be discussed at the D&D pizza meetings, as it is available.
45	Page 44, 4.7.2 Demolition of the Stack, ¶1. Concrete rubble from the stack will be stockpiled at the 207C Pond area per the demolition stack plan. Clarify if the area is within the actual pond footprint or along the pond area. There is not much storage room around the 207C area.	The initial planning indicates that the 207C area will be remedied by that time, and the area will be available for staging material and equipment.
46	Page 44, 4.7.2 Demolition of the Stack, ¶ 2 After the stack has been removed, the subcontractor will be directed by ER to place erosion and run-on/off controls in place. Will the trench be backfilled when the subcontractor is still on-site?	Yes

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47	Page 44, 4.7.3 Demolition of the Tunnels. Broomfield requests the following information regarding the demolition of the 3 tunnels connected to Building 771: (1) what plans will be in place for the characterization and remediation of the soil around the tunnels, (2) Will groundwater be an issue during the decontamination of the tunnels or when it is necessary to remove contaminated sections of the tunnel, (3) what impact will a cast-in-place remedy have on the water balance for the site, and (4) what plans are in place for the demolition of the tunnels if they do no meet the free-release criteria?	The soil around the tunnels will be characterized by ER in accordance with the IASAP and are not included in the scope of the DOP. Groundwater may be an issue during decommissioning activities, and it will be containerized and managed in accordance with the Incidental Waters Program. If the tunnel(s) will negatively impact groundwater, or depth to the top of the tunnel(s) changes due to final contours, backfill, and/or covers, or contamination requiring remediation is found below the tunnel(s); then the tunnel(s) will be removed. If the Sitewide Groundwater Balance Study, Land Configuration Basis Design, and/or ER characterization results change the tunnel disposition from that indicated in the DOP; then the consultative process will be used to determine the appropriate disposition method. If the tunnels do not meet the unrestricted release criteria, the tunnels will be decontaminated or removed and disposed of as waste.
48	Page 46, Table 6. Waste/Recyclable Material Estimated for the 771 Closure Project. The two "**" should be next to the LLMW –RCRA liquids, not the LLMW RCRA solids. I think RCRA Unit 374.3 accepts liquids.	The change was made as requested.
49	Page 46, Table 6. Waste/Recyclable Material Estimated for the 771 Closure Project. For the non-Rad regulated section of the table, should you add RCRA liquids?	No, there will be minimal, if any, non-radioactive RCRA liquids.

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50	Page 46, 5.1.3 Wastewater. Broomfield questions the use of the two process waste tanks in Building 731 and/or the tanks in Building 732 as a flow-through device for RCRA regulated liquids and non-RCRA regulated liquids. Building 731 has two "former RCRA 90-day tanks # 731-651 and 731-652 and the tank in Building 732 is an Interim Status Unit (40.16) and the regulatory issues have not been addressed in this section of the document. Broomfield requests the following information: (1) will the former RCRA tanks have to go through closure again if RCRA-regulated liquids pass through the tanks, (2) if the tanks do not have high level alarms, will someone physically inspect the tanks as the liquid is being transferred through the tanks, (3) if the secondary contaminant does not meet the criteria for regulated tanks, how can the tanks be used if they are required to be out-of-service, (4) define the proposed enhanced tank management requirements that will be required during the transfer of the waste and, (5) Broomfield would appreciate the opportunity to review and comment on the proposed requirements that will be identified in consultation with the Lead Regulatory Agency (LRA) before implementation. The City provided the same comments on concerns regarding the same issues with the draft 707 DOP. As of today, the City has not received any response to our comments relate to the 707 DOP and these issues.	(1) Yes, as necessary (2) Yes, if necessary (per work package and LRA consultation) (3) The tanks would be used as flow through tanks not staging and the LRA will be notified prior to transfer (4) Tank management requirements will comply with RCRA. The LRA will be consulted prior to initiating the activity. (5) Broomfield is welcome participate, but it should be coordinated through the LRA
51	Page 47, 5.3 Management Requirement for Compliance Order Wastes. This section of the DOP contains information related to "Compliance Order Wastes" and provided specific information for idle equipment and mixed residues, but does not contain specific information for waste chemicals. Please provide the following information for waste chemicals: (1) inventory, (2) location, (3) inspection schedule and, (4) plans for disposition of the waste chemicals. The information should be incorporated into the 771 DOP.	Hazardous waste chemicals are managed in accordance with RCRA including inspection frequency requirements and will be dispositioned appropriately per the Site Treatment Plan. This level of detail is not appropriate for the DOP. This information was discussed with the Broomfield representative and can be provided as requested, as the inventory is dynamic.
52	Page 47, 5.3.1 Idle Equipment, 3rd bullet. Clarify if inspections of idle equipment are performed by waste inspectors or "RCRA-qualified" waste inspectors. Broomfield is concerned waste inspectors are performing inspections of equipment that contain hazardous wastes or residuals of hazardous wastes.	Work activities will be planned, executed, and controlled in accordance with the RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities, which is incorporated into the DOP through reference. The DOP does not dictate training requirements. Training requirements are specified by Site's Training Program Manual.

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53	Page 48, Table 7. 771 Closure Project Idle Equipment with Hazardous Materials Inventory. Explain how Tank 42, located in Building 774, Room 203 can be active and yet be on the idle equipment inventory. Is the tank being used to store caustic material for the D&D activities in Building 771 and/or Building 774?	Tank 42 is actively used for bottle box operations. As such, it will be removed from the idle equipment inventory. Once bottle box operations are complete, the tank will be decommissioned.
54	Page 49, Mixed Residues, ¶ 3. Describe the process for terminating the "Mixed Residue Compliance Order on Consent" when the DOP is approved. What will happen to the controls and inspections that are in place for tanks when the DOP is approved? How will the Implementation Plan for Board Recommendation 94-1 be satisfied when the DOP is approved and tanks and ancillary pipes have not been decommissioned?	Approval of the DOP does not change the management requirements under the Order. The Order will not be terminated until the mixed residue tanks are decommissioned. The first sentence of the paragraph was removed for clarification.
55	Page 49, Table 8. 771 Closure Project Mixed Residue Units. Explain why some tanks in the table are listed as physically empty, inactive, or active. Modify columns to the table to reflect the associated EPA codes (if applicable) and the proposed closure method for each of the Mixed Residue Units. Broomfield wants to remind DOE the intent of the 771 DOP is to identify the specific plans and activities associated with decommissioning and demolition of the 771 facility.	As identified in footnote 26, physically empty tanks have been "tapped and drained." Inactive tanks will be decommissioned following tap and drain activities. The two active tanks, 544 and 545, may be used to transfer liquids generated during draining activities, as necessary. EPA codes are already defined in the previously approved Closure Description Documents (CDDs) and/or the RCRA Permit. The proposed closure methodology is detailed in Section 6 of the DOP.
56	Page 54, table 9. Material Recycling Options. The table suggests all radioactive mixed scrap material contaminated with hazardous constituents may be recycled under the exemption per §261.7. The §261.7 exemption only applies to containers, please clarify the recycle option.	The reference has been changed to 261.6.

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57	Page 55, 5.5 Waste Minimization and Recycling, ¶ 1. The City of Broomfield cannot support the proposed change to the RSOP for Recycling Concrete. More information is required and the proposed process needs to be refined. The concrete will not exceed twelve inches in thickness, but does not identify the length and width of the concrete. The layered approach does not lend itself for ultimate subsidence for backfilled areas of less than one percent. Layering of the concrete increase the potential for subsidence. A layer of soil is to be placed on top of the concrete, but the DOP does not define the size of the lift (amount of soil). Define a" formal compaction effort". Define the compaction protocol and the verification method of compaction. Will there be any QA/QC oversight of the compaction? Size reduction of the concrete is generally required so there will be no subsidence issues. Have the proposed changes been addressed and discussed with the Water Balance Group? Please provide the requested information related to the proposed changes to the RSOP for Recycling to the stakeholders, so we may have our Engineers review the proposed changes and provide informative comments.	Additional engineering information will be prepared on this activity to document that the use of slabs will still meet the requirement of providing a surface with a lifetime subsidence of less than 1%. Once this information is available, it will presented at a D&D Pizza Meeting.
58	Page 57, 6 Closure of RCRA-Regulated Units. The DOP is to serve as the RCRA permit modification for RCRA-regulated units within Buildings 771 and 774, yet does not identify the specific changes to the RCRA permit closure requirements. The changes need to be clearly identified along with the explicit changes for each unit. Table 10 and Appendix B identify the RCRA-regulated units, yet there are not units mentioned for Building 771 in Appendix B. Table 10 should be modified to reflect building number. Appendix A (Unit-Specific Information sheets) should be modified to include regulated status (interim or permitted), boundaries, EPA codes, closure method, and waste disposition. To be consistent with the other DOPS, amend Appendix B to reflect the 707 DOP.	The permit modification will be developed by the LRA once the DOP is approved in accordance with RFCA. Table 10 will be modified for clarification, but will not include boundaries, EPA codes, or container storage as this information is already addressed in the RCRA Permit or CDDs. Closure methodology is addressed in Section 6 of the DOP. Changes to the closure requirements in the permit include two new closure performance standards: historical knowledge confirmation and the use of scabbling and/or hydrolasing without additional RCRA sampling.

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59	Page 57, 6.1.1.1 Clean Closure, first bullet. If a spill occurred within a RCRA-regulated unit, a proposed closure method is to have "complete documentation" to demonstrate releases were adequately cleaned up per "visible residual inspections". "Complete documentation" has to be clarified. Visible residual inspections are not adequate verification methods for chemical spills such as solvents. Without final sampling verification, how can you verify the unit has been successfully decontaminated? To verify a unit has been "clean closed" the operator has to typically decontaminate the unit and sample the rinsate solution to verify the rinsate does not exceed the standard for constituents of concern. How does this change impact the RCRA closure criteria for the debris rule which requires you to meet a standard? How will this proposed method impact the final pre-demolition survey? Broomfield expects the regulators will oppose such a proposal. The City strongly opposes a closure method without any analytical verification method, especially with secondary containment systems. Concrete may not be used as backfill if it is not free-released of chemical contaminants that may impact groundwater or surface water.	This option will only be used if determined acceptable through LRA collaboration on a case-by-case basis. The Project will ensure units to be dispositioned will meet the applicable disposal site's waste acceptance criteria. Closure or partial closure will occur prior to the pre-demolition survey.
60	Page 58, Table 10. RCRA-Regulated Units in the 771/774 Closure Project. Identify the specific EPA codes for unit 771.1 and 774.1. Why is the incinerator excluded from Table 10? The incinerator is a RCRA-regulated unit and is not mentioned at all within the 771 DOP. Broomfield is adamant more details referring to the decommissioning and demolition of the incinerator should be indicated in the DOP to identify the project approach for the unit's decommissioning. The units decommissioning is an essential part of the 771closure project. Add the incinerator removal description to section 4.7, "Facility Demolition".	EPA codes are detailed in approved CDDs and/or the RCRA Permit. A RCRA closure description document is currently being developed for the incinerator pending final characterization results.

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61	Page 61, 6.1.4 Partial Closure. The ultimate disposition of piping embedded in the remaining slab, as well as piping located beneath the slab, will occur during ER activities per the DOP. Will ER be responsible for the RCRA closure? Broomfield is concerned there may be a potential for RCRA-regulated materials to be left in place without ER's knowledge and mixed waste may be remediated with radioactive waste and the waste will not be dispositioned properly. Identify the procedures ER have in place to manage remediation waste?	RCRA closure associated with piping imbedded in the slab will be handled by both ER and Decommissioning, depending on the area. The work will be conducted by the same contractor, and the RSOP for Facility Disposition outlines the requirements for leaving a pipe capped in place to ensure it can be identified at a later time. ER will use the existing procedures for managing remediation waste.
62	Page 61, 6.2.1 General Methodology for Glovebox Disassembly. See comment # 59 regarding closure by visual inspection.	This option will only be used if determined acceptable through LRA collaboration. The Project will ensure units to be dispositioned will meet the applicable disposal site's waste acceptance criteria. Closure or partial closure will occur prior to the pre-demolition survey.
63	Page 62, 6.2.1 General Methodology for Glovebox Disassembly. Describe how the presence of hazardous constituents will be identified in a glovebox?	Process knowledge will be used to determine which wastes were historically stored in a glovebox. Gloveboxes that have only stored characteristic waste and are free of liquids and significant staining will be handled as non-hazardous waste. Gloveboxes storing listed waste will be dispositioned per Section 6 of the DOP.
64	Page 62, 6,2,1 General Methodology for Glovebox Disassembly, ¶ 1, 3rd bullet. The DOP states the "Clean debris surface" standard will be used to determine if a glovebox is deemed to be non-hazardous. To utilize the debris rule, the generator is required to decontaminate prior to characterizing the media as non-hazardous.	Agreed.
65	Page 62, 6,2,1 General Methodology for Glovebox Disassembly, ¶ 3, 5th bullet. Per section 268 of the Colorado Hazardous Waste Regulation (CHWR), the DOP states the glovebox will be LDR compliant following encapsulation. Does encapsulation meet LDR requirements for F-listed wastes?	Yes

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67	Page 63, 6.2.2.1 General Methodology for RCRA-Regulated Tanks Disassembly, ¶ 2. The document states if a blockage is encountered that cannot be cleared readily during the tap and drain process, additional taps will be installed to minimize the length of the blocked section. The blocked section will be removed with "provisions to contain trapped liquids that may be present. These sections will be size reduced in a manner that accommodates the possibility that trapped liquids may be released to containment". Define the provisions of the activities and describe how the worker's safety is an integral part of the activity. How are pipes with contained liquids transferred to controlled tented areas? What is the process for pipe removal if there is severe blockage from sludge or material causing blockage? Broomfield understands this is a dynamic activity, but workers have to have procedures in place to know when to terminate jobs and request assistance from supervision and Health and Safety.	Work activities will be planned, executed, and controlled in accordance with the RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities, which is incorporated into the DOP through reference. Gloveboxes will be dispositioned in order to meet the disposal site waste acceptance criteria. The requested information is too detailed for inclusion in the DOP.
68	Page 64, 6.2.2.1 Piping Removal, 2nd bullet. For removal of pipes with no residual liquids or sludge, the DOP states the pipes section will be taken to the size reduction facility at an appropriate time. Waste waiting disposition, should never be left in a work area. There is an increased potential for the release of airborne contamination when radioactive debris is being stored within a work area and not properly packaged. Building 771 needs to identify a staging area for removed waste and the area has to be adequately monitored for airborne contamination.	Equipment/waste will be appropriately managed through Site procedures while awaiting size reduction.
69	Page 64, 6.2.2.1 Piping Removal, 7th bullet. The DOP does not adequately define the process for management of liquid waste during the 771 D&D project. Remaining liquids or sludges will be drained and placed into containers, but there is no mention of compatibility or segregation of EPA waste codes. The final step for liquid disposition is immobilization after sampling. What is the protocol for sampling? Reference the Sampling and Analysis (SAP) for this process and cite the regulation allowing to treat waste if it is RCRA-regulated.	All liquids generated from tap and rain activities are regulated under RCRA, as appropriate, and will be managed and handled in accordance with those requirements. The protocol for sampling is dictated by the treatment and/or disposal site's waste acceptance criteria. Treatment of RCRA wastes is regulated under the Site RCRA Permit.

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70	Page 64, 6.2.2.1 Piping Removal, last paragraph. Change the following sentence to read: "Each IWCP work package, which will be prepared prior to the start of closure activities, will include more specific and detailed instructions for the sequence of piping removal steps, removal and size reduction methodology, characterization process and hold points, and removal of residual material from pipe sections.	The change was made as requested.
71	Page 65, 6.2.2.3 Pencil Tank Removal, 5th bullet. Sections of tanks will be placed on open ends into drip pans to drain residual liquid or sludge. Identify the procedure and process for segregation of waste to ensure wastes are compatible. Clarify the size of pan to be used and the type of material to be used for the pans.	All hazardous wastes are managed by trained personnel in accordance with the applicable regulation(s). The information requested is too detailed for the DOP.
72	Page 65, 6.2.2.3 Pencil Tank Removal, 6th bullet. Incidental liquids will be immobilized with absorbent or collected in Kim-wipes as wet combustibles. Collecting incidental liquids may be generated a hazard if the liquids are oxidizers which were used in Building 771.	All incidental liquids will be managed appropriately.
73	Page 65, 6.2.2.4 Annular Tank Removal, 6th bullet. See # 71 and # 72 for liquid management concerns.	All hazardous wastes are managed by trained personnel in accordance with the applicable regulation(s). The information requested is too detailed for the DOP. All incidental liquids will be managed appropriately.
74	Page 66, 6.2.2.5 Raschig Ring Tanks Removal. If raschig ring tanks are not inspected visually, how will the tanks be inspected by real time radiography (RTR)? Will tanks be shipped on-site to a RTR unit? What procedure is in place to ship tanks with potential liquids on-site without proper packaging? The City would like clarification for RTR process of raschig ring tanks. The DOP states if tanks fail RTR, they will be returned to Building 771 or 774 to have the raschig rings removed. Categorize the additional steps and activities that will be required to ship the tank which contains liquid, which could be RCRA-regulated, back to the 771 or 774 building.	The information requested is too specific for inclusion in the DOP. Inspection and shipping criteria are dictated by Site procedure(s), in order to demonstrate disposal site waste acceptance criteria have been met.
75	Page 66, 6.2.2.5 Raschig Ring Tank Removal, 6th bullet. Explain how non-mobile is removed from raschig ring tanks using mechanical means. If the sludge is solid why does it have to be removed from the tank?	Disposition of Raschig ring tanks is dictated by the WIPP waste acceptance criteria. Removal of solid sludge will only occur if necessary for disposal.

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76	Page 66, 6.2.2.5 Raschig Ring Tank Removal, 7th bullet. See # 72 regarding the use of Kim-wipes as an absorbent.	All incidental liquids will be managed appropriately.
77	Page 67, 6.2.2.7 General Conditions for Tank Sections and Residual Materials. Change the following sentence to read: Each IWCP work package, which will be prepared prior to the start of tank removal activities, will include more specific and detailed instruction for the sequence and methodology of tank removal, size reduction, waste characterization and hold points, and separation of residual material from tanks sections.	The change was made as requested.
79	Page 69, 7.1.1 Chemical-Specific requirements and Considerations. Applicable or Relevant and Appropriate Requirements (ARARs) for UBC not only include NESHAPS pollutants for radionuclides, but the potential for volatile organic emissions from UBC or intrusion into contaminated groundwater may also include other NESHAPs pollutants. Again, this document should be site specific to identified activities and the organics should be identified not only to meet the ARAR requirement, but also to identify contaminants in the groundwater that may impact surface water. Fugitive dust is also an air pollutant that should be addressed in the ARAR section. Broomfield continues to have justified concerns with the methodology of air sampling during the demolition process of any facility at the Site. We understand other monitoring methods are being investigated to determine how enhanced monitoring may be performed during D&D activities. The City wants to reiterate the current air monitoring requirements are not sufficient to ensure the public or the environment is protected.	The currently documented IMP process for monitoring radionuclides provides for feedback within about eight days of beginning an activity. New analytical methods are being tested to shorten that response time significantly and, if applicable, will be employed on the demolition phase of the project. Potential VOC or fugitive dust emission ARARs have been identified in the ARAR section. Potential ARARs related to groundwater have not been identified since this action does not address groundwater remediation. However, project-specific groundwater monitoring and runoff monitoring are ongoing through the IMP process.
81	Page 70, 7.1.2.4 Volatile Organic Compound and Particulate Emission Controls, ¶ 1 Volatile organic compound (VOCs) controls will not be in place during the removal and transport of soils contaminated with VOCs because there is an anticipated low concentration of VOCs. How was this basis derived? If it is determined during the characterization or remediation activities VOC controls should be implemented, what procedure defines the criteria for the controls and at what levels are the controls activated? Broomfield requests the basis for this decision and does not feel the controls will be adequate if they are placed within an IWCP.	If it is determined that estimated VOC air emissions (based on VOC concentrations in the soil to be excavated) will exceed 1 ton per year, then an Air Pollutant Emission Notice will be submitted to the CDPHE, and Reasonably Available Control Technology (RACT) will be utilized. The final RACT determination will be negotiated with the CDPHE. For soil remediation activities, RACT is normally covering of soil piles and truck loads.

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82	Page 70, 7.1.2.4 Volatile Organic Compound and Particulate Emission Controls, ¶ 2. Regulation 7 is identified as the driver for transfer of liquid VOCs to a tank, container, or vehicle compartment with a capacity exceeding 56 gallons. The regulation for the storage of waste containing VOCs should also be cited with the associated criteria.	As reported in the Site's SARA Title III annual report, Building 771 no longer maintains any inventory of volatile organic products, so the threshold of 56 gallons is not met. Therefore, Regulation 7 was inappropriately identified as a driver for the transfer of liquid VOCs. The storage of waste containing VOCs will be managed in accordance with the waste management ARARs.
83	Page 71, 8 Environmental Consequences. The NEPA impacts for the 771 Decommissioning Operations Plan should be in the 771 DOP, not just the impacts from the UBC. The RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities and the RSOP for Facility Disposition included generic impacts for the Site. In the spirit of NEPA, the DOP should identify the NEPA impacts for 771 that address specific contaminants.	The reference of the NEPA analysis in the RSOPs is consistent with the spirit of NEPA and is consistent with the requirements of the DOE NEPA regulation. The NEPA analysis conducted for the RSOPs was consistent with the analysis requirement prior to planning decommissioning activities. The NEPA group was consulted in the preparation of the DOP to ensure that RSOP evaluations were sufficient for the activities in the DOP.
86	Page 71, 8.2 Air Quality, ¶ 2. The DOP suggests if a monitoring limit is exceeded, "operations will be stopped, the reason for the release will be determined, and actions will be taken to prevent further releases". Broomfield understands it takes weeks or months to receive air monitoring results and this process is unacceptable. A demolition job could be completed before the results are received. The current air monitoring process does not protect the environment or the public in a manner that could prevent on-going releases during the period of an exceedance.	The currently documented IMP process for monitoring radionuclides provides for feedback within about eight days of beginning an activity. New analytical methods are being tested to shorten that response time significantly and, if applicable, will be employed on the demolition phase of the project.
87	Page 72, 8.3 Water Quality. Broomfield is concerned water quality management is not being addressed in this document. Broomfield has addressed the same concerns with the other D&D documents and does not feel assured surface water will be protected adequately. Contaminated groundwater can degrade surface water and the document needs to identify specific controls to prevent the release of source contamination. The DOP only addresses UBC remediation and its' impact. Broomfield wants the DOP to identify water management controls for the project and the potential adverse impacts and how they will be mitigated.	Groundwater and surface water controls for decommissioning activities are detailed in the RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities and RSOP for Facility Component Removal, which are incorporated in the DOP through reference. Since the under building remediation is proposed to be conducted while the buildings are still standing, there should be no surface water issues associated with that activity. Groundwater controls are discussed in the DOP for under building remediation. If groundwater is encountered, it will be pumped and containerized and managed in accordance with the Incidental Waters Program.
88	Page 73, 8.10 Cumulative Effects. Does the section related to cumulative effects identify waste to be generated from the UBC remediation, 771 project remediation, or for the site?	The cumulative effects section is only for the under building contamination remediation.

City of Broomfield comments on the 771 Closure Project Decommissioning Operations Plan (DOP) Modification 4 and Proposed Action Memorandum (PAM) for Under Building Contamination (UBC) Remediation dated October 31, 2000, as amended by an e-mail from Shirley Garcia on January 16, 2001		
No.	**Comment**	**Response**
89	Page 74, Mitigation Measures. The exterior building walls will remain intact throughout the excavation of the UBC to mitigate negative impacts to personnel safety and the environment. What controls will be in place when contaminated sections of exterior walls are removed prior to UBC remediation? Define the process for enhanced controls.	If a structural wall has to be removed because it cannot be decontaminated, then the under building remediation will have to be conducted after demolition activities are completed. The area will have to be laid back or shoring will be installed in accordance with OSHA excavation requirements.
90	Page 81, 12 Glossary of Terms. The glossary of terms should include terms used in this document. A system should not be implemented to have to refer to several documents to use a specific document. It is not feasible to expect a person to have all procedures and documents; therefore creating a system of documents that will not be used.	The glossary only includes the terms unique to the document for consistency.
91	Appendix A. The Appendix does not include any unit-specific information sheets from Building 771. Change the Appendix to reflect vital information pertaining to each RCRA-regulated unit. See # 55 and # 58.	All 771 tank and glovebox unit specific information has been addressed in previously approved CDDs. Unit specific information sheets for rooms previously storing hazardous wastes are included in the RCRA permit and will not be included in the DOP. Appendix A and B provide unit-specific information and drawings for tank systems in Building 774.
92	Appendix B. Appendix B has drawings of 774 RCRA-units, but does not have drawings of 771 RCRA-units. Add 771 drawings to the appendix.	All 771 tank and glovebox unit specific information has been addressed in previously approved CDDs. Unit specific information sheets for rooms previously storing hazardous wastes are included in the RCRA permit and will not be included in the DOP. Appendix A and B provide unit-specific information and drawings for tank systems in Building 774.

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12 GLOSSARY OF TERMS

Following are terms that are unique to this RFCA decision document. For the definitions of other terms used in this and other RFCA decision documents, refer to the ***RSOP for Recycling Concrete***, the ***RSOP for Facility Disposition***, and the ***RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities***.

Decommissioning Area. Small, manageable grouping of similar systems, equipment, and areas or rooms that may be worked independently. Dismantlement Sets contain less than 2,000 dpm removable contamination and are decommissioned by Building Trades.

Dismantlement Set. Small, manageable grouping of similar systems, equipment, and areas or rooms that may be worked independently. Dismantlement Sets contain greater than 2,000 dpm removable contamination and are decommissioned by Steelworkers.

APPENDIX A

BUILDING 771/774
UNIT-SPECIFIC INFORMATION SHEETS

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Unit 774.2 – Liquid Waste storage

A. Location	Building 774 – Room 220
B. Chemical Composition	Mixed waste oils contaminated with various solvents and PCBs
C. Radioactinide Contamination	Low levels of contamination
D. Tanks Involved	Tanks T-102, T-103, and T-104 Room 220
E. Gloveboxes Involved	None
F. Other Components	Staging area for drums and other containers whose contents were to be transferred into tanks.
G. Compatibility Issues	N/A
H. Narrative Description	These tanks were used to store mixed waste oils contaminated with various solvents and PCBs. The waste oils were generated in various manufacturing processes and machinery at RFETS. Waste managed in these tanks was destined for destruction on site or transfer to off-site disposal facilities. This unit also includes a container staging area where containers of waste were staged to facilitate transfer of their contents into the storage tanks.

Unit 774.3A – Miscellaneous waste handling and solidification

A. Location	Building 774 – Room 210 and 212
B. Chemical Composition	Aqueous mixed waste containing heavy metals
C. Radioactinide Contamination	Low levels of contamination
D. Tanks Involved	Tanks T-7, T-8, Room 210, and T-12, Room 102
E. Gloveboxes Involved	Glovebox 4, Room 210
F. Other Components	None
G. Compatibility Issues	N/A
H. Narrative Description	This treatment process is used to immobilize aqueous mixed waste with cement to create a waste form that is suitable for disposal. Specific wastes treated in this unit include complex aqueous wastes are incompatible with other aqueous wastes, wastes high in chloride concentration or wastes otherwise not suitable for treatment in the aqueous waste treatment process.

Unit 774.3B – aqueous waste treatment

A. Location	Building 774 – Rooms 103 and 241
B. Chemical Composition	Aqueous mixed caustic or acidic waste contaminated with low concentrations of heavy metals and solvents
C. Radioactinide Contamination	Low levels of contamination
D. Tanks Involved	Tanks T-40, Room 103, and Tanks T-201, T-202, T-203, and T-204, Room 241
E. Gloveboxes Involved	None
F. Other Components	None
G. Compatibility Issues	N/A
H. Narrative Description	This treatment unit was used to process acidic and caustic aqueous mixed wastes through precipitation and neutralization. Process wastes were batched with reagents to remove radioactive contaminants through precipitation. Effluent waste was then neutralized and transferred to Building 374 for evaporation.

Unit 774.3C – Organic and Sludge Immobilization System

A. Location	Building 774 – Rooms 210 and 210A
B. Chemical Composition	Mixed waste oils contaminated with various solvents
C. Radioactinide Contamination	TRU levels of contamination
D. Tanks Involved	Tanks T13, T14, Room 210
E. Gloveboxes Involved	OASIS Glovebox, Room 210
F. Other Components	Mixer, Reagent Hopper, Vacuum Trap
G. Compatibility Issues	N/A
H. Narrative Description	The Organic and Sludge Immobilization System (OASIS) was used to treat TRU Mixed waste oils. The waste oils were transferred from various building via pipelines to Tanks T-13 and T-14 in Room 210. The waste oils were then transferred to a solidification unit located in the OASIS glovebox. The oils were placed in a drum in the bottom of the glovebox where Gypsum cement, a dry accelerator and liquid emulsifier were mixed with the waste. The mixing process was aided by a large mixer, which was activated until the mixture began to set up. Finally, the mixer was removed from the drum. The drum was then removed from the drum port and ultimately placed in a permitted storage unit.

125

Unit 55 – Old Aqueous waste processing

A. Location	Building 774 – Rooms 102, 202, and 203
B. Chemical Composition	Aqueous mixed caustic or acidic waste contaminated with low concentrations of heavy metals and solvents
C. Radioactinide Contamination	Low levels of contamination
D. Tanks Involved	Tanks C-1, F-5, T-9, T-10, T-210A, Room 102, T-1A, T-1RF, T-2F, T-4L, T-4R, T-70, T-71, T-73B, and GB-6 (reservoir), Room 202, and Old T-40, Room 203
E. Gloveboxes Involved	GB-6
F. Other Components	None
G. Compatibility Issues	N/A
H. Narrative Description	This treatment unit was used to process acidic and caustic aqueous mixed wastes through the late 1980s. Process wastes were batched with reagents to remove radioactive contaminants. All of the tanks in this unit were declared "RCRA Stable" in January of 1999.

Unit 56 – Old Organic and sludge immobilization system

A. Location	Building 774 – Room 210
B. Chemical Composition	Mixed waste oils contaminated with various solvents
C. Radioactinide Contamination	TRU levels of contamination
D. Tanks Involved	Tanks T-1, T-2, and T374A, Room 210
E. Gloveboxes Involved	None
F. Other Components	None
G. Compatibility Issues	N/A
H. Narrative Description	These tanks were used to store feed waste for the OASIS process until the early 1980s, when they were taken out of service and replaced with T-13, and T-14. These tanks were declared RCRA Stable in January, 1999.

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APPENDIX B

BUILDING 774 RCRA UNIT DRAWINGS

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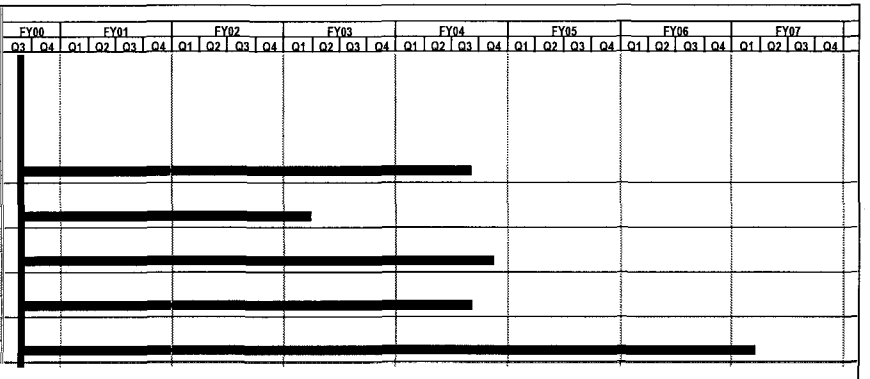
APPENDIX C

771 CLOSURE PROJECT IMPLEMENTATION SCHEDULE

Activity ID	Activity Description	Orig Dur	Baseline Start	Baseline Finish
1	Rocky Flats Closure Project			
1.C	B771/774 Closure Project			
1.C.A	B771/774 Closure			
+ 1.C.A.B	B771/774 Facilities Maintenance(Landlord			
		921	22MAY00	07JUN04
+ 1.C.A.C	B771/774 Deactivation			
		947	22MAY00	24DEC02
+ 1.C.A.D	B771/774 Decommissioning			
		1,550	22MAY00	18AUG04
+ 1.C.A.E	B771/774 Support Services			
		1,478	22MAY00	07JUN04
+ 1.C.A.F	D&D Program			
		1,495	22MAY00	13DEC06



Start Date 01FEB99
Finish Date 14DEC06
Data Date 22MAY00
Run Date 22JUN00 16:51

CPBB

ROCKY FLATS
CLOSURE PROJECT BASELINE

Cost Account Summary

Sheet 1 of 1

KAISER-HILL COMPANY

CLOSURE 2006 KAISER-HILL
ROCKY FLATS CLOSURE PROJECT

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